

Factors Affecting of Bed Occupancy Rate (BOR) in Hospital

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ABSTRACT

Background : Bed Occupancy Rate (BOR) is a number that shows the percentage of used shows the percentage of used bed room at certain times in the inpatient unit. This Bed Occupancy Rate (BOR) data can be used to determine the level of utilization of service facilities, find out the quality of hospital services, and find out the level of efficiency of hospital services.

Purpose : to find out the factors affecting of Bed Occupancy Rate (BOR) in hospitals. **Method :** The methods used from literature sources such as Google scholar, pubmed, and research gate. The way to locate literature in a number of key words is, Bed Occupancy Rate (BOR), factors of Bed Occupancy Rate (BOR). **Inklational criteria:** articles that have titles and content that are relevant to the goal, in Indonesian, English and arabian fulltext, research articles published in 2016-2020.

Method :

This study reviews hospitals using Bed Occupancy Rate (BOR) data from 2015 to 2025, covering both public and private institutions. The main focus is on the factors influencing BOR, such as healthcare personnel, length of stay, patient visits, bed management, referral systems, and service efficiency. Comparisons are made based on hospital type, location, policies, and conditions before and after the pandemic. The aim is to identify the key factors affecting BOR and their relationship with hospital service efficiency and quality.

Results : Based on the review of the articles, it is known that factors affecting of Bed Occupancy Rate (BOR) are internal factors such as communication services, the attitude of doctors and nurses, medical assistance, a facility for medical support, human resources and machines and other external factors such as the environment. **Conclusion :** Of the many factors that affect Bed Occupancy Rate (BOR) in hospitals, the most influential internal factors such as health care procedures and medical support infrastructure are among the most affected Bed Occupancy Rate (BOR) in hospitals.

Introduction

The hospital is one of the means of health services to the community and has a very strategic role in accelerating the improvement of the degree of public health. To realize optimal health status for the community, health efforts are carried out with approaches to maintaining health promotion (promotive), prevention of disease (preventive), healing of disease (curative), and recovery of health (rehabilitative) which is carried out thoroughly, integratedly and continuously. Hospitals have varying degrees of health care that can be encouraged to maintain patient loyalty. In the pattern of social interaction, the patient's perception goes a long way toward hospital service. According to this perception the patient's image of hospitals, which, in turn, may

be the quality of hospital service. The resulting impression is built on the perceptions of each individual individual.

Hospitals are a vital component of community health services and play a highly strategic role in accelerating the improvement of public health status. To achieve optimal community health, health efforts must be carried out through comprehensive, integrated, and continuous approaches, including health promotion (promotive), disease prevention (preventive), disease treatment (curative), and health rehabilitation (rehabilitative).

Hospitals provide varying levels of healthcare services that can be enhanced to maintain patient loyalty. In social interactions, the patient's perception significantly influences their experience with hospital services. This perception shapes the patient's overall image of the hospital, which in turn reflects the quality of hospital services. The impression formed is based on the individual perceptions of each patient.

The quality of good service is measured not only by the luxuries of facilities, the completeness of technology and physical appearance but by the attitude and behavior of employees must reflect professionalism and high commitment. In the process, a patient's satisfaction survey is conducted to improve the environment of hospitals, facilities, and facilities in a context of consumerism. Effectiveness is measured based on patient feedback to improve the skills of health-care providers and practices that are still controversial.

Patients' satisfaction reflects the quality of health care they receive. The quality of health services is meritorious to the perfection of health care in bringing satisfaction to each patient. The more perfect the contentment, the better the quality of health care. Nevertheless, the relatively good quality of service may not satisfy a patient. Patients cannot generally judge technical competence, so they judge the quality of services from nontechnical characteristics or interpersonal relationships and convenience of service.

In an effort to provide quality health care at a hospital, one of the indicators used to determine the level of hospital service. These hospital service indicators include like Bed Occupancy Rate, Average Length of Stay, Turn Over Interval, Bed Turn Over, Net Death Rate, Gross Death Rate. One of the most common health care indicators used that is Bed Occupancy Rate (BOR).

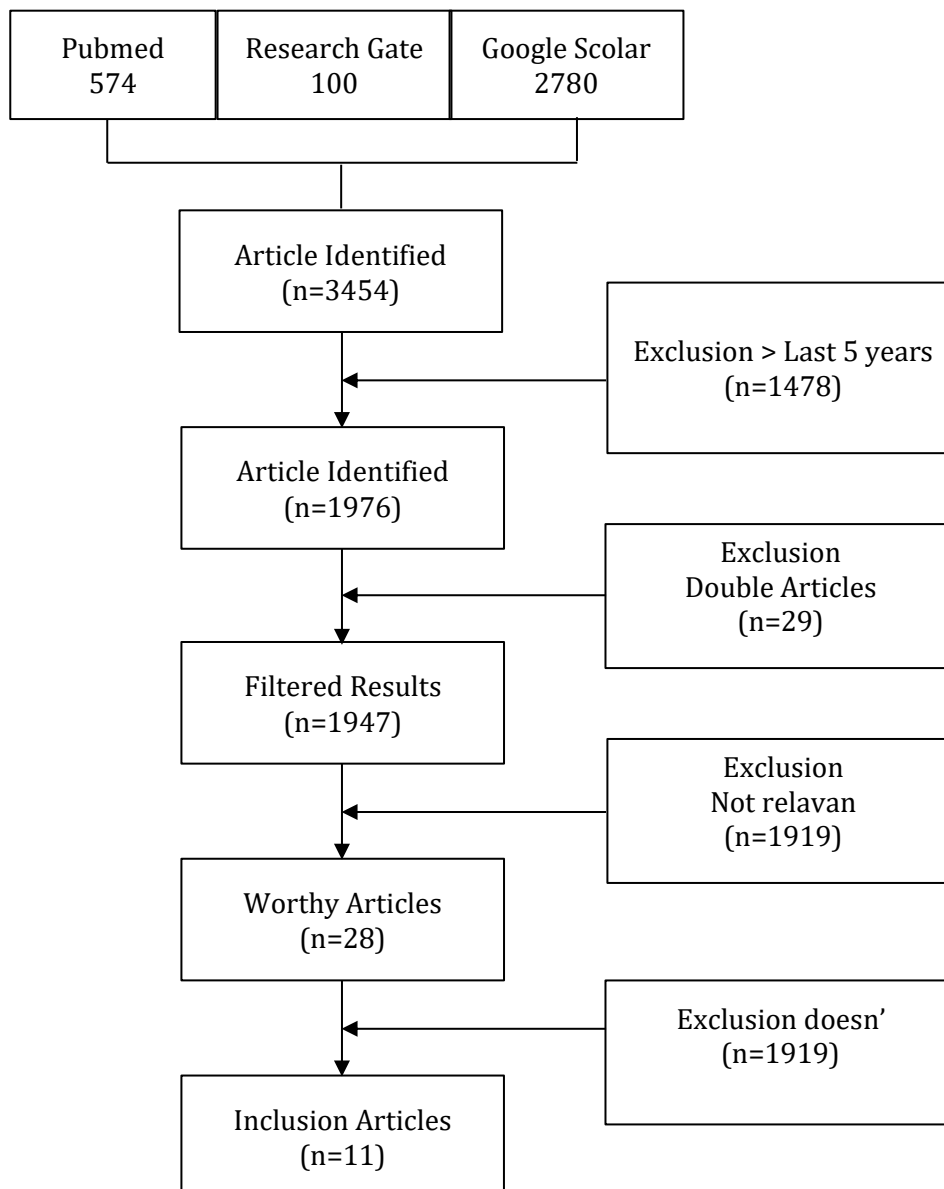
Bed Occupancy Rate (BOR) is one indicator that illustrates the level of utilization of beds in hospitals, the calculation is the percentage of use of beds at a certain time unit, so it can be seen a description of the use of beds in the hospital within a certain time period. The Bed Occupancy Rate (BOR) of a hospital can increase and decrease, this figure is directly proportional to the use of beds in the hospital (Hardika, 2020).

According to Sudra (2010;44) in Hidayah (2015) the ideal value of bed occupancy rate (BOR) is said to be statistically 75% -85%. The higher the BOR value means the higher the use of available beds for patient care. However, it should also be noted that the more patients served means that the more busy and heavier the workload of health workers in the unit and can increase nosocomial risk. As a result, patients lack the attention needed in the treatment process. In the end, an increase in BOR that is too high can actually reduce the quality of the performance of the medical team and reduce patient satisfaction and safety. On the other hand, a lower BOR means fewer beds are used to treat patients compared to the beds that have been provided. In other words, this small number of patients can cause economic income difficulties for the hospital..

Based on the description above about the factors that influence the Bed Occupancy Rate (BOR) in the hospital above, the review authors are interested in knowing a description of the factors that affect the Bed Occupancy Rate (BOR) with the aim of the literature is to know the factors that influence the Bed Occupancy Rate (BOR) in the hospital.

Based on the description above regarding the factors that influence the Bed Occupancy Rate (BOR) in hospitals, the authors are interested in exploring these factors in more depth. The aim of this literature review is to describe and identify the key factors that affect the Bed Occupancy Rate (BOR) in hospitals.

Methods



Guide Questions: What are the internal and external factors that affect the achievement of the Bed Occupancy Rate (BOR)? The key words are: Bed Occupancy Rate (BOR), factors that affect BOR. Inclusion criteria: Articles that have titles and content relevant to the objectives, in Indonesian, English, and Arabic and Fulltext, research articles published in 2016-2020. Exclusion criteria: Articles that do not have complete structure and article reviews.

Data was obtained from the electronic database of Pubmed, Research Gate and Google Scholar between 2016-2020. Each article is chosen to be read carefully from the abstract, objectives, data analysis from the initial question of the researcher to gather information about the factors that influence the Bed Occupancy Rate (BOR)

This study uses a literature review design to systematically explore research findings related to the factors affecting the Bed Occupancy Rate (BOR) in hospitals.

Relevant articles were collected from electronic databases including PubMed, ResearchGate, and Google Scholar. The search was limited to studies published between 2016 and 2025. Each article was selected through a careful screening process beginning with the title and abstract, followed by an in-depth review of the objectives and data analysis sections to ensure relevance to the research question regarding factors influencing the Bed Occupancy Rate (BOR).

Results

No.	Author	Journal Name, Vol, No, Year	Title	Method (Design, Sample, Variables, Instrument, Analysis)	Research result	Conclusion	Database
1	Tri Lestari	Journal of Health Information Management and Administration Vol. 2 No. 2 November 2019	Analysis Factors Determinants Efficiency Bed Value Occupancy Ratio : Fishbone Analysis	Descriptive Qualitative Medical Records Officer Head of Ward Doctor Medical Committee Data Triangulation Guidenlines Interviews	The cause of Inefficient BOR are caused by six Factors: Methods Machines, Resources, Human Resources (HR), Materials, Money and the Environment	Human resource factors significantly Influence the Inefficiency of the BOR. A shortage of healthcare workers and their competence can lead to delays in services, extended hospital stays, and suboptimal bed utilization	Google Scholar
2	Cynthia Inda Meidina	Simantek Scientific Journal Vol. 2 No. 2 April 2018	Analysis of the Relationship Between Satisfaction with Health Services and the	Descriptive, Crosssectional, 96 inpatients, Independent and Dependent Variables Questionnaire	Significant Factors that Influence BOR Include : <i>Tangibles, Empathy Reliability Responsiveness</i>	The five analyzed aspects were shown to have significant impacts on patient Satisfaction, which is indirectly Influenced by the BOR. A high or	Google Scholar

No.	Author	Journal Name, Vol, No, Year	Title	Method (Design, Sample, Variables, Instrument, Analysis)	Research result	Conclusion	Database
			Achievement of the Patient Outcome Rate at Bhayangkara Hospital, Medan		<i>Assurance</i>	low BOR reflects the efficiency of impacts comfort, speed of care and of care and the overall patient Experience during their stay	
3	Prima Soultioni Akbar	Journal Proceedings Call for Papers SMIKNAS 2019	The impact of Health service Quality on Increasing Patient BOR at Kaliwates General Hospital Jember	Cross - Sectional Subject 100 Independent and Dependent Variables Questionnaire	The BOR value is Influenced by Factors such as Physical facilities, Reliability, Capture power, Assurance, Certainty, and Empathy	The BOR is Influenced by Several important Factors, including Physical facilities, Service reliability, staff responsiveness to patient needs, Guaranteed service Quality and Empathy from Healthcare workers. These factors Directly contribute to the comfort and speed of service, which ultimately Impacts efficiency the of hospital Bed utilization	Google Scholar
4	Istiqomah Dwi Putri	Wahana Accounting Scientific Journal Vol.2 No. 1 2017	Analysis of the impact of Patient BOR, Operational Cost budget & Activation Ratio on Financial Performance Based on the Ability of non Tax State Revenue	Descriptive Quantitative all Public Service Agencies in Indonesia around Hospital in DKI Jakarta Province Dependent and Independent Variables Purposive sampling	Factors Affecting Patient Occupancy (BOR) include : Performance Factors, Finance and Operational Budge	Factors affecting Patient occupancy (BOR) include Performance - Related factors such as the quality of Healthcare service, staff responsiveness operational efficiency and service reliability. These Elements directly Influence how	Google Scholar

No.	Author	Journal Name, Vol, No, Year	Title	Method (Design, Sample, Variables, Instrument, Analysis)	Research result	Conclusion	Database
5	Tri Bintari Putri	Journal of Public Health Vol. 5 No. 1 January 2017	(PNBP) to Cover Operational Costs of Public service Agencies (BLU) Hospital in Jakarta Province Overview of Several Factors Related to the Utilization of BOR at Dr. R.Koesma Regional General Hospital, Tuban	Explanatory Research total Sample : 14 Analysis Univariate	Influencing Factors : Planning Finance, Resources, and Rewards	Effectively hospital Beds are utilized and impact overall Patient satisfaction And flow Factors influencing the efficiency of Inpatient care Include planning, Finances, resources and rewards. One of the most crucial is Human resources where there is still a shortage of Personnel involved in healthcare Management in each ward. This results in suboptimal service Coordination and Impacts overall Service quality	Google Scholar
6	Renny Indharwati	Thesis University of Jember 2018	Resources Regarding Low BOR Achievement Based on Inpatient Assessment at Jember Lung Hospital in 2018	Qualitative with Case studies 18 samples in-depth Interviews Documentary Observational Triangulation	These factors Cause low bed Utilization at Jember lung Hospital	Factors that Influence health Care are : Public Facilities, Medical Facilities, Medical Support facilities, Rates, Service Availability, Number of medical Personnel, doctors and Nurses attitudes Service time, Socioeconomic	Google Scholar

No.	Author	Journal Name, Vol, No, Year	Title	Method (Design, Sample, Variables, Instrument, Analysis)	Research result	Conclusion	Database
7	Aske J M Oerlemans Hub Wollersheim	Journal of BM Canesthesiology 2016	Rationing in the Intensive Care unit in Case of Full Bed occupancy A survey Among Intensive Care unit physicians A survey Among Intensive Care Unit Physicians	A questionnaire Based on Literature and data from Individual and Group interviews	Influencing Factors include: Guidelines and Compliance/ Regulations	Distance and Transportation to Health care service Motivation and Priority for Hospitals Influencing Factors include Guidelines and Compliance with Regulations, which Play a crucial role in ensuring Standards, safe, and efficient Healthcare service. Adherence to these Protocols directly Impacts operational Effectiveness and Patient care quality	Pubmed
8	Sandu Siyoto Alberth Ronald Tule	Global Jurnal of Health Science Vol 11 No. 13 2019	Analysis of BOR in Term of internal Factors (Procedures, Doctor, Nurse, Facilities, and Infrastructure	Cross-sectional 214 samples Questionnaires Analyzed using Descriptive and Ordinal Regression	Factors influencing BOR include : Service Procedures, Doctor service, Nursing services, Facilities and infrastructure	Factors influencing BOR include Service procedures Doctor service, Nursing service, as well as facilities and infrastructure. these elements Collectively Determine the Efficiency and Quality of inpatient Care, which directly the optimal use of Hospital beds	Research Gate

No.	Author	Journal Name, Vol, No, Year	Title	Method (Design, Sample, Variables, Instrument, Analysis)	Research result	Conclusion	Database
9	Maryam Yaghoubi, Mohammad Reza Soeltani Zarandi and Fatemah Rahmawati Najarkolaei	Journal of Military Medicine Vol. 19 No. 4 2017	Factors Affecting BOR Based on Multiple - Criteria Decision Analysis (Hierarchical Analysis) In a Military Hospital	Descriptive 18 samples questionnaire	Factors that Influence : Clinical Activities Medical staff Financial access Hospital type and Service Diseases & areas Active emergency Conditions	Several factors BOR, including Clinical activities, Availability of Medical staff. Financial access, Hospital type and Services, disease Patterns and Geographic areas, As well as active Emergency Conditions. These Factors collectively Affect patient Admission rates, Length of stay, and the overall efficiency of Inpatient care	Research Gate
10	Fitra Nanda Hardika	Thesis University of Muhammdiyah Malang 2020	Identifying Factors Affecting BOR at Hospital X in Malang	Descriptive Qualitative 23 sample Variables : Factors Affecting BOR Questionnaire	There are 10 Internal factors that influence BOR, namely Communication Service, Medical Facilities Paramedic Care Tariffs, Nurse Attitudes, General Facilities, Medical Personnel, Supporting Medical facilities, Doctor attitudes, Service Availability	Of the ten internal Factors influencing the Bed Occupancy Rate (BOR), the Highest and best Percentage score was found in Service Communication, Demonstrating the Importance of effective interaction between healthcare workers and patient Meanwhile, the Lowest percentage Score was found in Service availability, Indicating ongoing Challenges in the overall availability	Google Scholar

No.	Author	Journal Name, Vol, No, Year	Title	Method (Design, Sample, Variables, Instrument, Analysis)	Research result	Conclusion	Database
11	Azharatul Jannah	Thesis Alauddin State Islamic University Makasar 2016	Analysis of Efficiency Assessment of Bed Usage in Inpatient Rooms at Type B Hospitals in Makasar City In 2016	Qualitative Descriptive Sample : 5 informants Each hospital Primary and Secondary data	Input factors From the Bed Assessment Namely Human Resources (Healthcare Personnel), and Infrastructure	ff services within the hospital Input factors from the Bed assessment include human Resource (Heslth Care Personnel) and infrastructure. These two Components are Essential in Determining the Hospital's capacity to deliver effective Inpatient services and directly impact the efficiency of Bed utilization	Google Scholar

Discussion :

"The ineffective Bed Occupancy Ratio (BOR) is influenced by several factors, including: Methods (non-compliance with doctors' visitation schedules and the lack of implementation of Clinical Pathway Standard Operating Procedures), Machines (limited bed availability, system errors, and ineffective meeting forums), Human Resources (a shortage of specialist doctors, uncertainty in visitation schedules, and the predominance of part-time doctors), Materials (incomplete data recapitulation and SHRI containing only summaries of daily activities), Funding (no allocated budget for providing rewards), and Environment (damaged road access and the hospital's less strategic location). According to the fishbone diagram, the main causes of BOR inefficiency are human and machine factors." (Lestari, 2019)

"There are five significant factors that influence BOR include : tangibles, empathy, reliability responsiveness, assurance, relationship, aspect and the achievement of the hospital's Bed Occupancy Rate (BOR)." The five analyzed aspects were shown to have significant impacts on patient Satisfaction, which is indirectly Influenced by the BOR. A high or low BOR reflects the efficiency of impacts comfort, speed of care and of care and the overall patient Experience during their stay (Meidina, 2018)

The BOR value is influenced by factors such as Physical facilities, Reliability, Capture power, Assurance, Certainty, and Empathy. The BOR is influenced by Several important factors, including Physical facilities, Service reliability, staff responsiveness to patient needs, Guaranteed service Quality and Empathy from Healthcare workers. These factors Directly contribute to the comfort and speed of service, which ultimately Impacts efficiency the of hospital Bed utilization (Akbar,P.S, 2019)

"This study shows that there is a significant relationship between the patient occupancy rate (BOR) and the financial performance (POBO) of the BLU Hospital. This implies that efficient utilization of hospital beds leads to improved hospital services, which in turn increases hospital service revenue. BOR plays a critical role in hospital planning and decision-making; therefore, efforts to increase hospital visits must be continuously enhanced, one of which is through the optimal utilization of inpatient services to boost revenue." (Putri,I.D, 2017)

"The level of knowledge among inpatient ward heads regarding the inpatient daily census reached 78.6%. The planning aspects in the utilization of BOR data include staffing needs, facility and infrastructure planning, and inpatient service mapping. The funding sources for the utilization of BOR data come from the Regional Budget (APBD), the National Budget (APBN), and hospital operational funds. Human resources in the inpatient wards are still insufficient, and staff play a role in managing healthcare services in each unit. There are no specific incentives or rewards related to the utilization of BOR data. The completeness of inpatient daily census data collection reached 70.9%, while the actual utilization of BOR data by inpatient ward heads was 37.5%." (Tri et all., 2017)

"The general facilities at Jember Pulmonary Hospital, such as the availability of clean water, bathrooms and toilets, as well as hospital beds, are in good condition. However, the toilets still have a slight odor, the wooden visitor chairs cause discomfort, the number of visitor chairs is insufficient, and the parking area is limited in size, lacks a roof, and often becomes muddy during the rainy season. The pulmonary-specific medical facilities at Jember Pulmonary Hospital are complete, including peak flow meters, mucus extractors, spirometers, and CPAP masks, all of which are in good condition. The supporting medical facilities, including the pharmacy, laboratory, and nutrition unit, are clean and function well. However, patients often experience long wait times at the pharmacy, and the release of laboratory test results is not prompt. The service fees at Jember Pulmonary Hospital are affordable and appropriate for general inpatient services. For patients covered by BPJS or KIS, no service charges are applied, as these are fully covered by BPJS. Medical staff are always available when needed, indicating that the availability of healthcare services at the hospital is adequate. The number of medical and paramedical personnel is sufficient. The time allocated by doctors and nurses for patient care is appropriate. However, the administrative process is time-consuming, often leading to long queues. The administrative procedures are also complicated and not easily understood by the informants." (Indharwati, R, 2018)

In this study more than half of the respondents (52.7 %) experienced the situation in which the

number of patients exceeds the number of available ICU beds at least once a week. When asked whether they considered this to be an ethical dilemma, more than half answered “always” or “usually”. These results imply that situations of full bed occupancy are a regularly occurring, practical as well as an ethical, problem in many ICUs. It is therefore surprising that many respondents were unfamiliar with the guideline that was designed to aid them in these problematic situations (Oerlemans et al., 2016)

It is recommended that hospitals pay attention to aspects that can improve work effectiveness whether it is doctors, nurses, pharmacists or other medical support staff and make improvements to these aspects so that the achievement of hospital goals can indeed be measured by the effectiveness of their employees. In order to support efforts to improve the quality of services, things that are still lacking the need to be immediately corrected, hoped that further research will use larger samples, involving more hospitals, as well as wider locations, so that conclusions better describe the state of the study sample, and minimize bias in research (Siyoto, S., & Tule, A. R., 2019)

Factors that influence : Clinical Activities, Medical staff, Financial access, Hospital type and, Service Diseases & areas, Active emergency, Conditions, Several factors BOR, including Clinical activities, Availability of Medical staff. Financial access, Hospital type and Services, disease Patterns and Geographic areas, As well as active Emergency Conditions. These factors collectively affect patient admission rates, Length of stay, and the overall efficiency of Inpatient care (Yaghoubi, M., Zarandi, M. R. S., & Najarkolaei, F. R. 2017)

There are 10 Internal factors that influence BOR, namely Communication Service, Medical Facilities Paramedic Care Tariffs, Nurse Attitudes, General Facilities, Medical Personnel, Supporting Medical facilities, Doctor attitudes, Service Availability Of the ten internal Factors influencing the Bed Occupancy Rate (BOR), the Highest and best Percentage score was found in Service Communication, Demonstrating the Importance of Importance of effective interaction between healthcare workers and patient Meanwhile, the Lowest percentage Score was found in Service availability, Indicating ongoing Challenges in the overall availability of services within the hospital (Hardika, F.N., 2020)

"The service indicator for the Bed Occupancy Rate (BOR) at Labuang Baji Regional Hospital is 45.3%, at Makassar City Regional Hospital is 66.5%, and at Haji Makassar Regional Hospital is 60.2%. These figures do not meet the international standard of 75–85%, although they are in accordance with the standard set by the Health Office (60–85%). The Length of Stay (LOS) values for all three hospitals meet international standards but do not comply with the standards established by the Health Office. The Turnover Interval (TOI) at Labuang Baji Regional Hospital is 5 days, which does not meet the ideal standard, while the TOI at Makassar City Regional Hospital is 1 day and at Haji Makassar Regional Hospital is 2 days — both of which fall within the acceptable standard range of 1–3 days." (Jannah, A. 2016)

Conclusion

Based on the analysis from the review above, it can be concluded that the factors that influence BOR in hospitals are divided from internal factors from the hospital itself and external factors. Human resources (medical personnel) and medical support infrastructure are the factors that most influence BOR in hospitals. For further research using Doctor Schedule variables and hospital regulations that can affect BOR in accordance with the objectives of the literature review in the form of factors that affect the Bed Occupancy Rate (BOR) in hospitals so that the hospital can improve the quality of health services so as to increase the value. BOR at the hospital.

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