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Analysis Of Bed Utilization Efficiency In Welas Asih Hospital Of West Java Province Per Inpatient Room Based On Inpatient Indicators In 2024

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Abstract

The efficient utilization of hospital beds is a crucial indicator for evaluating the quality of inpatient services. This study aims to analyze the efficiency of bed utilization per inpatient room at Welas Asih Regional Hospital in West Java Province throughout 2024. Using a quantitative descriptive approach, the research sourced secondary data from the Daily Inpatient Census (SHRI) from January to December 2024. The study population and sample comprised data from all 24 inpatient rooms, with data analysis performed using standard formulas from the Ministry of Health. The results show that the overall Bed Occupancy Rate (BOR) was 89% (not ideal), the Average Length of Stay (AVLOS) was 3 days (not ideal), the Turn Over Interval (TOI) was 0 days (not ideal), and the Bed Turn Over (BTO) was 94 times per year (not ideal). Only one room, Salman Al Farizi Level 3 NICU, met all four ideal indicators. A detailed analysis per room revealed that surgical wards consistently experienced overcapacity, while pediatric and maternity wards showed relatively better efficiency levels but still fell short of the ideal standard. Such room-based analysis is rarely conducted in regional hospitals and provides new insights into how utilization varies significantly across units. These discrepancies are attributed to high demand, limited bed capacity, and suboptimal service management. In conclusion, bed utilization efficiency at Welas Asih Regional Hospital remains suboptimal and requires a comprehensive evaluation, targeted room-specific interventions, and systemic improvements.

Keywords*: Bed Occupancy Rate, Bed Turn Over, Efficiency, Inpatient Indicators, Turn Over Interval*

INTRODUCTION

Introduction

Efficient and high-quality healthcare is a primary demand for any healthcare facility, especially hospitals. As a vital institution providing comprehensive services, hospitals play a crucial role in offering promotive, preventive, curative, rehabilitative, and palliative care (Kementerian Kesehatan & Republik Indonesia, 2023). One of the core services that reflects a hospital's operational efficiency is inpatient care. This sector not only requires high medical quality but also optimal resource management, particularly of beds, as a significant portion of hospital revenue is generated from this unit (Lubis & Astuti, 2018; Wibowo & Safitri, 2020). Therefore, the efficient use of hospital beds is a key indicator for evaluating service quality and managerial success. Effective management ensures that each bed can serve patients to its maximum capacity without compromising quality.

In the context of hospital management, measuring the efficiency of bed utilization can be done systematically through statistical analysis of data from medical records. Medical records, as regulated by Ministerial Regulation No. 24 of 2022, are crucial documents containing patient identity, examination history, treatment, and actions that form the basis for hospital statistics (Kementerian Kesehatan & Republik Indonesia, 2022). A primary data source for this analysis is the daily inpatient census (SHRI), which is a routine record of patient movement within the inpatient unit (Mayanora & Pasaribu, 2022; Rustiyanto, 2021). The statistical reports generated from this data, as noted by Rahmawati et al. (2025), are highly informative and essential for management in making strategic decisions and assessing service success.

Research Problem

Despite its importance, the efficiency of inpatient services often faces various challenges. One major issue is the mismatch between indicator values and the ideal standards set by the Ministry of Health. For instance, the Bed Occupancy Rate (BOR) frequently exceeds the ideal range of 60-85%, indicating

that beds are overutilized. This can have negative consequences, such as a decline in service quality due to an excessive workload on medical staff and an increased risk of nosocomial infections (Ningrum, 2019; Septiyowati et al., 2024). On the other hand, an excessively short Average Length of Stay (AVLOS) (below 6-9 days) can suggest that patients are discharged before they have fully recovered, potentially endangering their health (Sari et al., 2023; Valentina, 2019). This phenomenon highlights an imbalance between bed availability and high patient demand, which can disrupt operational stability and service quality.

Furthermore, efficiency problems are also reflected in the Turn Over Interval (TOI) and Bed Turn Over (BTO) indicators. A low or zero-day TOI indicates minimal time available for bed cleaning and sterilization, which is essential for preventing cross-infection within the hospital environment (Mayanora & Pasaribu, 2022; Syaidah & Wahab, 2022). Meanwhile, a very high BTO (exceeding 40-50 times per year) signifies an excessively rapid patient turnover and an intensive workload for medical and nursing staff, which can affect their focus and diligence in providing care (Lubis & Astuti, 2018). These discrepancies point to the need for a thorough evaluation of bed management systems, including administrative processes and patient flow, to achieve optimal efficiency without compromising quality.

Research Objectives and Significance

Given the importance of these issues, this study aims to analyze the efficiency of bed utilization at Welas Asih Regional Hospital in West Java Province for each inpatient room, based on the four key indicators: BOR, AVLOS, TOI, and BTO. The urgency of this research lies in the need for a comprehensive understanding of the efficiency of inpatient services at the hospital, utilizing data from the daily census. The novelty of this study, in addition to analyzing data on a room-by-room basis, is its detailed evaluation of how indicator values align with Ministry of Health standards, a level of specific analysis not commonly found in previous studies. The findings are expected to serve as a basis for Welas Asih Regional Hospital's management to formulate more precise and strategic policies for inpatient service management, thereby improving efficiency, quality, and patient safety in the future.

RESEARCH METHODS

Efficient and high-quality healthcare is a primary demand for any healthcare facility, especially hospitals. As a vital institution providing comprehensive services, hospitals play a crucial role in offering promotive, preventive, curative, rehabilitative, and palliative care (Kementerian Kesehatan & Republik Indonesia, 2023). One of the core services that reflects a hospital's operational efficiency is inpatient care. This sector not only requires high medical quality but also optimal resource management, particularly of beds, as a significant portion of hospital revenue is generated from this unit (Lubis & Astuti, 2018; Wibowo & Safitri, 2020). Therefore, the efficient use of hospital beds is a key indicator for evaluating service quality and managerial success. Effective management ensures that each bed can serve patients to its maximum capacity without compromising quality.

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RESULTS AND DISCUSSION

Result

Based on the results of the study titled Analysis of Bed Use Efficiency at West Java Province Compassion Hospital Per Inpatient Room Based on Inpatient Indicators in 2024. The data from this study were compiled based on inpatient service indicators, which include BOR (*Bed Occupancy Rate*), AVLOS (*Average Length of Stay*), TOI (*Turn Over Interval*), and BTO (*Bed Turn Over*). This information was obtained from the recording of SHRI (daily census of hospitalizations) in each room during the period from January to December 2024. The collection of SHRI forms was carried out daily by medical record officers in all rooms. There are 24 inpatient rooms including Uthman Bin Affan 1, Uthman Bin Affan 2, Uthman Bin Affan 3, Umar Bin Khattab 1, Umar Bin Khattab 2, Umar Bin Khattab 3, GICU, PICU, CICU, Salman Al Farizi level 1, Salman Al Farizi level 2 Infection, Salman Al Farizi level 2 *Non* Infection, Salman Al Farizi level 3 NICU, Siti Khodijah Nifas, Siti Khodijah Gynaecology, Hasan Bin Ali, Husain Bin Ali, Sa'id Bin Zaid, Khalid Bin Walid, Ali Bin Abi Talib Lt 3 Ali Bin Abi Talib 4th Lt, Abdurahman Bin Auf 1 TB Isolation, Abdurahman Bin Auf 1 ICU and Abdurahman Bin Auf 2

Table 1. Daily Hospitalization Per Room Census Recapitulation Data in 2024

Number	Room Name	Day Treatment (HP)	Treatment Duration	Number of Patients Discharged (Alive + Dead)	Number of beds	Number of Days in 1 Period (1 Year)
1.	Utsman Bin Affan 1	4.785	5.018	1.016	14	
2.	Utsman Bin Affan 2	4.063	3.973	1.086	12	
3.	Utsman Bin Affan 3	5.530	6.341	1.429	16	
4.	Umar Bin Khattab 1	14.344	14.071	3.536	40	
5.	Umar Bin Khattab 2	12.801	12.660	3.716	40	366 Days
6.	Umar Bin Khattab 3	14.583	15.422	3.639	40	
7.	GICU	4.603	4.497	1.142	15	
8.	PICU	1.753	1.274	938	8	
9.	CICU	2.246	2.261	881	8	

10.	Salman Al Farizi Level 1	9.166	8.561	4.911	20
11.	Salman Al Farizi Level 2 Infeksi	7.377	5.314	1.108	28
12.	Salman Al Farizi Level 2 Non Infeksi	3.925	6.206	463	10
13.	Salman Al Farizi Level 3 NICU	2.221	2.934	333	8
14.	Siti Khodijah Nifas	13.726	13.830	7.162	36
15.	Siti Khodijah Ginekologi	828	643	1.414	4
16.	Hasan Bin Ali	15.002	14.214	3.899	45
17.	Husain Bin Ali	16.682	16.016	3.972	49
18.	Sa'id Bin Zaid	12.757	12.984	3.605	45
19.	Khalid Bin Walid	14.348	10.628	4.234	49
20.	Ali Bin Abi Thalib Lt 3	7.667	7.703	2.092	27
21.	Ali Bin Abi Thalib Lt 4	5.585	5.622	1.557	21
22.	Abdurrahman Bin Auf 1 Isolasi TB	8.631	8.279	2.021	26
23.	Abdurrahman Bin Auf 1 ICU	2.334	2.232	744	11
24.	Abdurrahman Bin Auf 2	15.228	14.172	3.220	45
	Jumlah	200.185	194.855	58.118	617

Based on data from Table 1, it can be seen that the most treatment days and treatment times were in the Husain Bin Ali room as many as 16,682 treatment days and 16,061 treatment periods; then for the highest number of patients discharged was found in the Siti Khodijah Nifas room as many with 7,162 patients.

Table 3. Calculation Results of BOR, AVLOS, TOI, BTO Per Inpatient Room in 2024

Number	Room Name	Rekap Indikator Rawat Inap							
		BOR (60-85%)	**Desc.**	**AVLOS (6-9 Days)**	**Desc.**	**TOI (1-3 Days)**	**Desc.**	**BTO (40-50 times per year)**	**Desc.**
1.	Utsman Bin Affan 1	93%	Not Ideal	5 Days	Not Ideal	0 Days	Not Ideal	73 Times	Not Ideal
2.	Utsman Bin Affan 2	93%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	91 Times	Not Ideal
3.	Utsman Bin Affan 3	94%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	89 Times	Not Ideal
4.	Umar Bin Khattab 1	98%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	88 Times	Not Ideal
5.	Umar Bin Khattab 2	87%	Not Ideal	3 Days	Not Ideal	1 Days	Ideal	93 Times	Not Ideal
6.	Umar Bin Khattab 3	100%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	91 Times	Not Ideal

7.	GICU	84%	Ideal	4 Days	Not Ideal	1 Days	Ideal	76 Times	Not Ideal
8.	PICU	60%	Ideal	1 Days	Not Ideal	1 Days	Ideal	117 Times	Not Ideal
9.	CICU	77%	Ideal	3 Days	Not Ideal	1 Days	Ideal	110 Times	Not Ideal
10.	Salman Al Farizi Level 1	125%	Not Ideal	2 Days	Not Ideal	0 Days	Not Ideal	246 Times	Not Ideal
11.	Salman Al Farizi Level 2 Infeksi	72%	Ideal	5 Days	Not Ideal	3 Days	Ideal	40 Times	Ideal
12.	Salman Al Farizi Level 2 Non Infeksi	107%	Not Ideal	13 Days	Not Ideal	0 Days	Not Ideal	46 Times	Ideal
13.	Salman Al Farizi Level 3 NICU	76%	Ideal	9 Days	Ideal	2 Days	Ideal	42 Times	Ideal
14.	Siti Khodijah Nifas	104%	Not Ideal	2 Days	Not Ideal	0 Days	Not Ideal	199 Times	Not Ideal
15.	Siti Khodijah Ginekologi	57%	Not Ideal	0 Days	Not Ideal	0 Days	Not Ideal	354 Times	Not Ideal
16.	Hasan Bin Ali	91%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	87 Times	Not Ideal
17.	Husain Bin Ali	93%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	81 Times	Not Ideal
18.	Sa'id Bin Zaid	78%	Ideal	4 Days	Not Ideal	1 Days	Ideal	80 Times	Not Ideal
19.	Khalid Bin Walid	80%	Ideal	3 Days	Not Ideal	1 Days	Ideal	86 Times	Not Ideal
20.	Ali Bin Abi Thalib Lt 3	78%	Ideal	4 Days	Not Ideal	1 Days	Ideal	78 Times	Not Ideal
21.	Ali Bin Abi Thalib Lt 4	73%	Ideal	4 Days	Not Ideal	1 Days	Ideal	74 Times	Not Ideal
22.	Abdurrahman Bin Auf 1 Isolasi TB	91%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	78 Times	Not Ideal
23.	Abdurrahman Bin Auf 1 ICU	58%	Not Ideal	3 Days	Not Ideal	2 Days	Ideal	68 Times	Not Ideal
24.	Abdurrahman Bin Auf 2	92%	Not Ideal	4 Days	Not Ideal	0 Days	Not Ideal	72 Times	Not Ideal

Based on the data from Table 2, it can be seen that the Salman Al Farizi Level 3 NICU room has reached an ideal value, while the other rooms are still found not to have reached ideal numbers from all four indicators (BOR, AVLOS, TOI, and BTO)

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Table 3. Results of the Calculation of BOR, AVLOS, TOI, and BTO Inpatient Indicators in 2024

Number	Indicator	Ideal Standard Ministry of Health	Welas Asih Regional General Hospital
1	BOR (Bed Occupancy Rate)	60-85%	89%

2	AVLOS (Average Length of Stay)	6-9 Days	3 Days
3	TOI (Turn Over Interval)	1-3 Days	0 Days
4	BTO (Bed Turn Over)	40-50 Times / Year	94 Times

Based on data from Table 3, it is known that the overall results of the indicator values at the Welas Asih Hospital have not reached the ideal value of the Ministry of Health Standards.

Based on the analysis of inpatient service indicators at Welas Asih Regional Hospital in 2024, the findings reveal that overall, the hospital's performance metrics have not met the ideal standards set by the Ministry of Health. The hospital-wide Bed Occupancy Rate (BOR) was recorded at 89%, which significantly exceeds the ideal range of 60–85%. This indicates an exceptionally high level of bed utilization. Conversely, the Average Length of Stay (AVLOS) was only 3 days, falling short of the ideal standard of 6–9 days. This suggests that the average duration of patient care is quite brief. Furthermore, the Turn Over Interval (TOI) was 0 days, meaning there is virtually no downtime between a patient's discharge and the next patient's admission. The Bed Turn Over (BTO) was 94 times per year, far exceeding the ideal standard of 40–50 times annually, which points to an extremely high frequency of bed use. Notably, only one room, the Salman Al Farizi Level 3 NICU, met all four ideal indicators. The majority of other rooms failed to meet one or more of these standards, and some were non-compliant across all four metrics.

These significant discrepancies are likely triggered by several underlying factors. First, the limited bed capacity in some rooms directly contributes to the high BOR, as beds are constantly occupied due to continuous patient arrivals. Second, the excessively short AVLOS suggests that patients may be discharged more quickly than is medically ideal, possibly driven by the urgent need to free up beds for new admissions amid high demand. Third, a zero-day TOI points to a severely strained service load and a continuous patient transfer system, leaving no time for proper bed preparation. Fourth, the high BTO indicates an intensive and rapid patient turnover, which can lead to staff burnout and an increased risk of a decline in the quality of care provided.

The non-compliance with these indicators can have a detrimental impact on the overall quality of hospital services. A consistently high BOR, without a corresponding increase in bed capacity or human resources, may lead to a decrease in the quality of care as staff are overworked. An overly short AVLOS also poses a risk to patient health, as they might be discharged before making a full recovery. A low or zero-day TOI heightens the risk of cross-contamination and nosocomial infections due to insufficient time for disinfection. Meanwhile, the high BTO signifies a rapid patient rotation that can increase the workload on healthcare staff, potentially leading to medical errors and a reduction in the thoroughness of care.

To address these critical issues, the hospital must implement comprehensive improvement measures. A thorough review of bed management practices is essential, including the potential for redistributing patients to balance the workload across different rooms. Increasing the number of beds in high-occupancy areas is also crucial to alleviate the strain. The patient discharge process should be re-evaluated to ensure patients are only released when they are truly fit to go home, preventing an unnatural decrease in AVLOS. Implementing a mandatory interval between patients is vital to achieve an ideal TOI, which will help maintain hygiene standards and patient safety. Furthermore, the hospital should consider increasing its healthcare staff and providing regular training to enhance service efficiency and effectiveness. By taking these steps, Welas Asih Regional Hospital can improve its inpatient service performance to meet national standards, ultimately providing safer, more effective, and higher-quality care to its community.

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