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Statistical Overview of Bed Utilization in the NICU of Praya Regional General Hospital

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ABSTRACT

Efficient utilization of hospital beds is an essential aspect of healthcare service management. This study aims to describe the statistical overview of bed utilization in the Neonatal Intensive Care Unit (NICU) of Praya Regional General Hospital. A quantitative research design was employed, with data collected from the daily inpatient census throughout 2024. Indicators analyzed included Bed Occupancy Ratio (BOR), Length of Stay (LOS), Turn Over Interval (TOI), and Bed Turn Over (BTO). Results showed that the average BOR was 57%, indicating a moderately utilized capacity, while the average LOS was 6.0 days, aligning with the standard set by the Ministry of Health. TOI was recorded at 4.6 days, which exceeded the recommended range of 1–3 days, reflecting inefficiency in bed turnover. Meanwhile, BTO was 2.8 times annually, far below the standard of 40–50 times, suggesting underutilization of available capacity. These findings underscore the need for improved management strategies to optimize resource allocation in neonatal care.

Keywords: Statistics, bed utilization, NICU, underscore standar

1. BACKGROUND

Hospitals serve as vital institutions in providing comprehensive health services, including outpatient, emergency, and inpatient care. The efficient use of hospital resources, especially inpatient beds, directly influences service quality, patient satisfaction, and economic sustainability [1]. According to Indonesian Law No. 44 of 2009, hospitals are required to ensure the availability and efficiency of health services, with medical records playing a central role in maintaining service quality and patient safety [2].

Hospital statistics are critical tools for decision-making. Data derived from medical records provide insights into the performance of healthcare services, enabling managers to evaluate efficiency and implement improvements [3]. Inpatient indicators such as BOR, LOS, TOI, and BTO are commonly used to assess hospital performance in terms of bed utilization [4].

The Neonatal Intensive Care Unit (NICU) represents a highly specialized area where efficient bed management is crucial. Given the vulnerability of patients and the high resource intensity, optimal utilization of NICU beds is essential for both patient outcomes and hospital efficiency [5].

Praya Regional General Hospital, as a referral hospital in Central Lombok, manages NICU services that require systematic evaluation to ensure effective utilization of available resources. This study examines statistical indicators of bed use in the NICU during 2024, providing evidence-based insights for hospital management

2. RESEARCH METHODS

Design This study applied a quantitative descriptive statistic

research design to evaluate bed utilization.

Data/Sample The study focused on patients admitted to the NICU of Praya Regional General Hospital throughout January–December 2024.

Instruments The primary instrument was the daily inpatient census (Sensus Harian Rawat Inap, SHRI), which records patient admissions, discharges, transfers, and length of stay.

Data Collection Data were collected from medical records and SHRI reports managed by the hospital's medical records unit.

Data Analysis Collected data were analyzed using standard hospital statistical formulas to calculate BOR, LOS, TOI, and BTO. Results were tabulated and compared against Ministry of Health benchmarks.

3. RESULTS AND DISCUSSION

Below are the results of the research in NICU inpatients. The total number of patients admitted in the year 2024 is 552 patients.

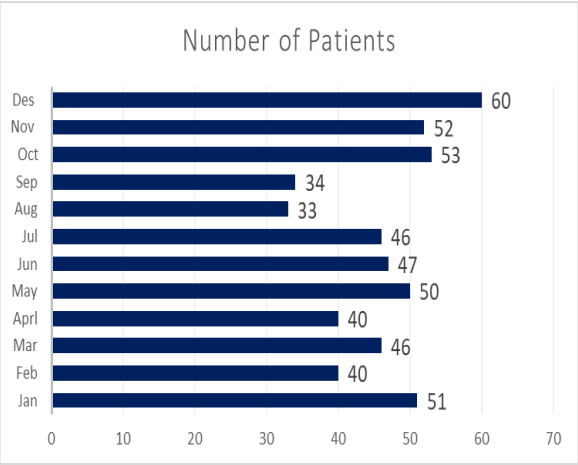

Figure 3. number of NICU patients

Based on figure 1, it can be discerned that the highest number of patients admitted occurred in the months of January, October, November, and December.

Table 2. indicator bed

MONTH	*BOR*	*LOS*	*TOI*	*BTO*
Jan	66%	6,9	3,2	3,1
Feb	21%	2,4	9	2,4
Mar	69%	5,7	3	2,8
Aprl	2%	2	9,8	2,8
May	74%	7,2	2,3	3,4
Jun	58%	5,3	4,5	2,7
Jul	63%	6,5	4	2,8
Aug	52%	7,6	6,5	2,2
Sep	43%	7,8	7,7	2,1
Oct	73%	7	3,1	2,8
Nov	78%	6,6	2	3,1
Des	85%	7,9	1,1	3,8

The average Bed Occupancy Rate (BOR) is 57%. Thus, the highest BOR was observed in December at 85%. The lowest average Length of Stay (LOS) occurs in April, totaling 2 days, while the highest LOS is recorded in December, amounting to 7.9 days. The lowest TOI value was 1.1 days in December, while the highest TOI value was observed in April, reaching 9.8 days. The total value of BTO in the NICU over the course of a year amounts to 34 times, with an average of 2.8 occurrences per month.

Results of the analysis are summarized in **Table 2**.

Table 3. Summary of Bed Utilization in NICU 2024

Indicator	**Result (Average)**	**Standard (Depkes RI, 2005)**	**Interpretation**
BOR	57%	60–85%	Slightly below standard, indicates underutilization
LOS	6.0 days	6–9 days	Meets standard

TOI	4.6 days	1–3 days	Exceeds standard, inefficient turnover
BTO	34 times	40–50 times	Far below standard, underutilization

The BOR of 57% indicates that nearly half of available beds remained unoccupied, suggesting room for improvement in capacity planning. LOS at 6.0 days aligns with the national standard, showing acceptable treatment durations. However, TOI of 4.6 days suggests beds remained unused longer than the recommended 1–3 days, contributing to inefficiency. Furthermore, BTO at 34 times per year falls significantly below the standard of 40–50, highlighting a serious underutilization problem.

These findings are consistent with previous studies which emphasize that inefficient bed use reduces hospital performance and financial sustainability [6] [7] [8]. Improving referral systems, patient flow management, and bed allocation policies could enhance NICU efficiency [9].

4. CONCLUSION

This study revealed that while the average LOS in the NICU of Praya Regional General Hospital met national standards, BOR was slightly below the threshold, TOI exceeded the recommended range, and BTO fell far short of national benchmarks. Collectively, these findings indicate underutilization and inefficiency in NICU bed management. Efforts to optimize patient flow and reduce idle bed time are necessary to improve hospital service efficiency.

5. THANKS

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