

ANALYSIS OF FACTORS AFFECTING THE AVAILABILITY OF INPATIENT BEDS AT MITRA MEDIKA AMPLAS HOSPITAL

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Abstract

The availability of inpatient beds is a critical issue in healthcare systems that affects the quality and efficiency of hospital services. This study aims to analyze the factors contributing to the imbalance between the demand for inpatient care and bed capacity, as well as to evaluate the role of discharge management and room allocation systems at Mitra Medika Amplas General Hospital. A descriptive qualitative approach with a phenomenological design was employed. Data were collected through observation, documentation, and in-depth interviews with hospital management, healthcare providers, and patients, and analyzed thematically based on Patient Flow, Bed Utilization, and Supply–Demand theories. The findings indicate that limited inpatient bed availability is not solely caused by physical constraints such as the number of beds, but also by suboptimal discharge management and the lack of integration with hospital information systems. Hospital performance indicators show a Bed Occupancy Rate (BOR) of 105–121%, exceeding the ideal standard of 60–85%, with an Average Length of Stay (ALOS) of 4–5 days and a Turnover Interval (TOI) of 1 day. Despite relatively fast bed turnover, the high BOR reflects excessive pressure on service capacity, primarily due to delayed discharges, ineffective inter-unit coordination, and inconsistent implementation of early discharge policies. These conditions contribute to increased waiting times in the Emergency Department and decreased patient satisfaction and safety. This study recommends strengthening digital-based discharge management, implementing real-time bed monitoring systems, enhancing inter-unit coordination through multidisciplinary discharge teams, and adopting continuous quality improvement (CQI) strategies. The findings highlight the importance of integrating operational efficiency with service quality in hospital capacity management.

Keywords: Inpatient Bed Availability, Discharge Management, Patient Flow, Bed Occupancy Rate, Hospital Service Quality

Introduction

The availability of inpatient beds remains a critical issue in healthcare systems, as it directly affects service quality, efficiency, and patient safety. Hospitals, particularly those with high patient volumes, frequently experience imbalances between the demand for inpatient care and the availability of beds. This condition is increasingly evident in Emergency Departments (ED), where overcrowding often occurs due to delays in transferring patients to inpatient units. In Indonesia, the hospital bed-to-population ratio remains below the ideal standard, indicating structural limitations in meeting healthcare demands (Ministry of Health Republic of Indonesia, 2023; World Health Organization, 2022). This imbalance reflects a fundamental challenge in hospital capacity management that requires immediate and strategic solutions.

Beyond infrastructure constraints, inefficient hospital management plays a significant role in limiting inpatient bed availability. In particular, ineffective discharge planning and suboptimal bed allocation systems contribute to prolonged bed occupancy. Previous studies have identified delayed patient discharge as a key factor that reduces bed turnover and limits access for new patients (Liu et al., 2018; Sun et al., 2013). Many hospitals still rely on conventional discharge processes without integrating digital systems, resulting in administrative delays and poor coordination among units. Consequently, patients in the ED often experience extended waiting times, which negatively impacts patient satisfaction and overall service quality (Forero et al., 2019).

High bed occupancy rates also have broader implications for healthcare delivery. Studies have shown that excessive occupancy increases the workload of healthcare providers, leading to fatigue, stress, and a decline in the quality of care (Powell et al., 2019). Furthermore, persistent overcrowding in EDs has been recognized as a global issue affecting both developed and developing countries. This highlights the need for comprehensive strategies that address not only physical capacity but also operational efficiency, particularly in patient flow and discharge management.

RSU Mitra Medika Amplas, a type C hospital in Medan, faces similar challenges in managing inpatient bed availability. Despite having a capacity of approximately 200 beds and a relatively efficient Average Length of Stay (ALOS) of 4–5 days, the hospital consistently records a Bed Occupancy Rate (BOR) exceeding 100%, far above the recommended standard of 60–85% (Ministry of Health Republic of Indonesia, 2023). At the same time, the Turnover Interval (TOI) remains stable at one day, indicating rapid bed turnover. However, these indicators suggest that high patient inflow, particularly from the ED, surpasses the hospital's capacity, leading to delays in inpatient admission and overcrowding in emergency services.

The underlying issue is further compounded by suboptimal discharge management practices. Discharge processes are not yet fully integrated with digital hospital information systems, resulting in delays in administrative procedures, pharmacy services, and physician rounds. In addition, early discharge policies are not consistently implemented, causing bed blocking even when patients are clinically ready to leave. Ineffective coordination among multidisciplinary teams further contributes to delays, reducing the efficiency of bed utilization (Forero et al., 2019).

Given these challenges, it is essential to explore the underlying causes of inpatient bed shortages from both managerial and experiential perspectives. This study adopts a qualitative phenomenological approach to gain an in-depth understanding of the factors influencing bed availability, including patient flow, discharge management, and inter-unit coordination. By examining real-world practices and experiences within the hospital setting, this research aims to provide evidence-based recommendations for improving hospital capacity management.

Therefore, this study seeks to analyze the determinants of inpatient bed availability at RSU Mitra Medika Amplas and to evaluate the role of discharge management in optimizing bed utilization. The findings are expected to contribute to the development of more effective, integrated, and sustainable strategies to reduce overcrowding, improve patient flow, and enhance the overall quality of hospital services.

Methods

This study employed a qualitative research design with a phenomenological approach to explore stakeholders' lived experiences regarding inpatient bed availability. The phenomenological approach was used to capture the meaning of experiences related to bed shortages, discharge planning, and room allocation within the hospital setting (Creswell et al., 2018).

The study was conducted at RSU Mitra Medika Amplas. Participants were selected using purposive sampling and included hospital management, healthcare providers (physicians and nurses), administrative staff, and patients or their family members. Inclusion criteria consisted of direct involvement in inpatient services, relevant experience, and willingness to participate.

Data were collected through in-depth interviews, participant observation in the Emergency Department and inpatient units, and document analysis of hospital records, including Bed Occupancy Rate (BOR), Average Length of Stay (ALOS), and Turnover Interval (TOI). These multiple data sources were used to ensure a comprehensive understanding of the phenomenon.

Data analysis was conducted using thematic analysis following the framework of Matthew B. Miles, A. Michael Huberman, and Johnny Saldaña (2019; 2021), including data reduction, data display, and conclusion drawing. Coding techniques were applied to identify key themes and patterns across the data (Johny et al., 2021).

To ensure trustworthiness, the study applied triangulation of sources, methods, and time, along with member checking and peer debriefing, as recommended by Uwe Flick (2022). These strategies ensured the credibility, dependability, and confirmability of the finding (Uwe Flick et al., 2021).

Result

This study identified several key themes related to inpatient bed availability at RSU Mitra Medika Amplas, derived from interviews with management, healthcare providers, administrative staff, and patients.

1. High Demand and Overcapacity (Input Factor)

A major finding was the significant increase in patient demand, particularly from the Emergency Department (ED) and outpatient services. Hospital performance indicators showed that Bed Occupancy Rate (BOR) consistently exceeded 100%, indicating structural overcapacity. Healthcare providers reported that the increasing number of ED visits directly contributed to delays in inpatient admission. As one physician noted:

“The main constraint comes from fluctuating patient numbers, especially when many patients arrive simultaneously.”

This finding reflects an imbalance between healthcare demand and available bed capacity, consistent with the supply–demand framework.

2. Inefficient Discharge Planning (Output Factor)

Discharge management emerged as a critical bottleneck affecting bed availability. Although discharge planning was implemented, it was often delayed due to administrative processes, medication preparation, and family readiness.

A staff member explained:

“Patients are often declared fit for discharge in the morning, but administrative processes delay their discharge until the afternoon.”

This delay resulted in bed blocking, where beds remained occupied despite patients being clinically ready to leave, contributing to prolonged waiting times in the ED.

3. Limitations in Bed Management and Information Systems (Throughput Factor)

The study found that bed management systems were not fully integrated with real-time digital monitoring. Data on bed availability were often outdated, leading to inefficiencies in patient placement. An IT staff member stated:

“The system is not yet real-time. Bed availability still depends on manual updates from wards.”

This lack of integration created coordination gaps between departments, causing delays even when beds were physically available.

4. Mismatch in Bed Allocation and Class Distribution

Another important issue was the imbalance in bed distribution across different classes. Lower-class wards (e.g., class III) were consistently full, while higher-class rooms (VIP or class I) were sometimes vacant.

Administrative staff highlighted:

“Even when VIP rooms are available, patients cannot be transferred because of insurance or class restrictions.”

This mismatch limited the effective utilization of existing capacity and increased waiting times for patients requiring inpatient care.

5. Increased Workload and Operational Pressure

Healthcare workers reported increased workload during periods of high occupancy. Limited bed availability required additional coordination and prolonged patient management in the ED.

A nurse stated:

“When beds are full, our workload increases, especially in managing patients who must wait in the ED.”

Despite these challenges, staff consistently emphasized maintaining patient safety and service quality.

6. Impact on Patient Experience and Satisfaction

Patients and their families reported prolonged waiting times (6–9 hours) before obtaining inpatient beds. While clinical care during waiting periods was perceived as adequate, delays reduced comfort and satisfaction.

One patient’s family noted:

“We had to wait almost half a day in the ED before getting a room. It was uncomfortable, even though the care was good.”

This finding highlights that delays primarily affected patient experience rather than perceived clinical quality.

7. Need for System Improvement and Strategic Management

Across all informant groups, there was consensus on the need for improving hospital bed management systems. Key recommendations included strengthening discharge planning, implementing real-time bed monitoring, improving inter-unit coordination, and optimizing capacity planning.

A healthcare provider summarized:

“Bed management and discharge processes need to be strengthened to reduce waiting times.”

Overall, the study demonstrates that inpatient bed shortages are not solely caused by limited physical capacity but also by inefficiencies in discharge management, bed allocation, and information systems. These factors interact within the patient flow system, resulting in overcrowding, prolonged ED waiting times, and increased operational pressure.

Discussion

The findings of this study highlight that inpatient bed shortages at RSU Mitra Medika Amplas are not merely caused by limited physical capacity but are strongly influenced by inefficiencies in patient flow management, particularly in the areas of input, throughput, and output processes.

First, the high Bed Occupancy Rate (BOR) exceeding optimal standards indicates a mismatch between demand and hospital capacity. According to the World Health Organization, an ideal BOR ranges between 60–85%, while rates above this threshold may lead to overcrowding, decreased quality of care, and increased patient safety risks (WHO, 2023). Similar findings have been reported by Hannah T. Kohn et al. (2022), who emphasized that excessive hospital occupancy is associated with longer waiting times in emergency departments and delayed admissions (Kohn et al, 2023).

Second, discharge planning plays a crucial role in determining bed availability. This study found that delays in administrative processes and coordination contribute to prolonged length of stay and bed blocking. Effective discharge planning has been widely recognized as a key strategy to improve hospital throughput and reduce unnecessary bed occupancy (Rebecca M. Taylor et al., 2021). Furthermore, John W. Creswell and recent healthcare system studies emphasize that inefficient discharge systems can create bottlenecks that affect overall patient flow and hospital efficiency.

Third, limitations in real-time bed management systems were identified as a significant barrier. The lack of integrated digital systems results in delayed information exchange between units, which hinders timely decision-making. Recent studies have shown that the implementation of real-time bed management systems can significantly reduce waiting times and improve patient flow efficiency (Michael R. Carter et al., 2023). Digital transformation in hospital management is therefore essential to enhance coordination and responsiveness.

Another important finding is the mismatch in bed class distribution, where lower-class beds are overutilized while higher-class beds remain underused. This issue is commonly observed in healthcare systems with tiered service structures and insurance-based restrictions. According to Organisation for Economic Co-operation and Development (2022), inequitable resource distribution within hospitals can reduce system efficiency and limit access to care, particularly for vulnerable populations (OECD, 2022).

The study also revealed increased workload and operational pressure among healthcare workers during peak occupancy periods. This aligns with findings from World Health Organization (2022), which reported that overcrowding in emergency departments significantly increases staff burnout and reduces service quality. Despite these challenges, healthcare providers in this study demonstrated strong commitment to maintaining patient safety and care quality (WHO., 2022).

From the patient perspective, prolonged waiting times negatively affected comfort and satisfaction, although the perceived quality of clinical care remained acceptable. This suggests that patient satisfaction is not only determined by clinical outcomes but also by service efficiency and waiting time, as supported by Avedis Donabedian framework on healthcare quality, which emphasizes the importance of structure, process, and outcomes.

Overall, this study confirms that inpatient bed shortages are a multidimensional issue involving systemic inefficiencies rather than solely capacity limitations. Strengthening discharge planning, implementing real-time bed management systems, improving coordination across units, and optimizing resource allocation are critical strategies to enhance hospital performance and patient flow.

Conclusion

This study concludes that inpatient bed shortages at RSU Mitra Medika Amplas are primarily driven by systemic inefficiencies in patient flow management rather than solely by limited physical capacity. The imbalance between high patient demand and available beds, particularly reflected in elevated Bed Occupancy Rate (BOR), contributes significantly to delays in patient admission from the Emergency Department.

Key factors identified include suboptimal discharge planning processes, lack of real-time bed management systems, and mismatches in bed class allocation. These issues lead to bed blocking, prolonged waiting times, and increased workload for healthcare providers. Despite these challenges, the quality of clinical care remains relatively maintained; however, patient satisfaction is negatively affected due to delays and inefficiencies in service delivery.

Improving hospital performance requires a comprehensive and integrated approach, including strengthening discharge planning, implementing real-time digital bed management systems, enhancing interdepartmental coordination, and optimizing resource allocation. Addressing these factors is essential to improve patient flow, reduce overcrowding, and enhance overall healthcare service quality.

Future research is recommended to explore the effectiveness of digital health interventions and policy-based bed management strategies in improving hospital efficiency and patient outcomes.

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