

Enhancing Inter-Ward Coordination Through Strategic Bed Management in a Tertiary Care Maternity Unit: A Quality Improvement Study from DGH Matale

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Publication Date: 2026/04/13

Abstract:

➤ *Introduction:*

District General Hospital Matale, a key maternal care provider in Sri Lanka, faces overcrowding despite low overall bed occupancy. Adaptive bed management strategies were introduced to improve coordination, space use, and care quality.

➤ *Objectives:*

Evaluate and enhance bed management practices in the maternity unit of District General Hospital Matale.

➤ *Methodology:*

A mixed-methods process improvement study was conducted in the maternity units of DGH Matale (Nov 2024–Aug 2025), combining quantitative bed metrics with qualitative staff and patient feedback. Thirty staff and twenty patient participants were recruited through purposive and consecutive sampling, respectively. Interventions included daily tracking, patient categorization, ergonomic upgrades, and inter-ward relocations, with data collected via semi-structured questionnaires and monthly feedback sessions.

➤ *Data analysis:*

Quantitative data were analyzed in IBM SPSS using appropriate parametric and non-parametric tests (t-tests, Wilcoxon, ANOVA, Chi-square, Mann–Whitney U, Spearman correlation), with survey reliability assessed by Cronbach's alpha and factor analysis. Qualitative feedback from open-ended responses was thematically coded and summarized by frequency counts to complement quantitative findings.

➤ *Result:*

Inter-ward bed management improved occupancy rates across four maternity wards: Antenatal (92%), Postnatal (25%), Gynecology (45%), and Labor (287%). Staff satisfaction was high for bed design (95%), infection control (85%), and inter-unit communication (80%), while relocation protocols received moderate approval (45%). Patient feedback showed 50% satisfaction with bed management and comfort, with 60% preferring low-height beds and 65% favoring ward transfers over waiting.

➤ *Conclusion:*

Adaptive bed management is key to delivering safe, efficient maternal care in resource-limited settings. At DGH Matale, standardizing monitoring, refining relocation protocols, and upgrading infrastructure are recommended to align capacity with demand. Staff training, ward reconfiguration, and continuous audits will support sustained quality and operational resilience.

Keywords: *Inter-Ward, Coordination, Effective, Bed Management.*

How to Cite: Fernando G. H. S.; Basnayake K. D. B.; Attanayaka A. M. T. K.; Samaranyaka K. E.; Saddasena G. M. I. O.; Niyarapola D. R. G. M.; Jayasundara P. M. C. K. (2026) Enhancing Inter-Ward Coordination Through Strategic Bed Management in a Tertiary Care Maternity Unit: A Quality Improvement Study from DGH Matale.

International Journal of Innovative Science and Research Technology, 11(4), 376-383.

<https://doi.org/10.38124/ijisrt/26apr119>

I. INTRODUCTION

➤ Background

Effective hospital bed management is crucial for providing quality healthcare services, ensuring patient safety, and optimizing hospital resources (Nguyen et al., 2005). In 2024, with the continuous advancements in medical technology and increasing patient demands, efficient hospital bed management has become more important than ever (Tolf et al., 2020). Across the globe, healthcare systems are under increasing pressure to deliver high-quality patient care while maintaining financial sustainability (de Souza et al., 2016). Determining the optimal number of staffed inpatient beds presents a multifaceted challenge for healthcare organizations, as it requires careful consideration of various dynamic factors—including anticipated patient admissions, forecasted service demand, and institutional capacity planning—that collectively influence the balance between resource availability and clinical need (Bartlett et al., 2023). Further, rising demand, aging populations, and resource constraints have prompted hospitals to seek innovative strategies that improve service delivery and treatment outcomes without escalating operational costs (de Souza et al., 2016). Among these strategies, optimizing hospital bed utilization has emerged as a critical focus area.

Sri Lanka demonstrates a notably high hospital bed penetration rate of 4 beds per 1,000 population—among the highest in Southeast Asia—with inpatient services predominantly delivered through state-run institutions, which, as of 2016, comprised 73% of all hospitals and held 93% of the national bed capacity across 628 public facilities, underscoring the central role of public healthcare infrastructure in shaping the country's bed occupancy dynamics and service accessibility (Ranga Sabhapathige, 2022).

Bed occupancy rate, defined as the percentage of inpatient beds occupied over a given period, is a critical indicator of hospital efficiency (Bartlett et al., 2023). Effective hospital bed management is influenced by a range of interdependent factors, including timely patient discharge processes, accurate admission forecasting, real-time bed tracking systems, staff availability, infrastructure capacity, and coordination across clinical departments—all of which must align to ensure optimal resource utilization and uninterrupted patient flow (Garcia-Vicuña et al., 2023). A high BOR in select units, despite low overall occupancy, reflects poor alignment between infrastructure and clinical demand (Bartlett et al., 2023).

The District General Hospital (DGH) Matale is a tertiary care institution in Sri Lanka that provides a wide range of specialized services, including comprehensive

maternal healthcare through its antenatal, labor, postnatal, and gynecology units. Despite having an overall bed occupancy rate (BOR) of less than 50% (Annual bulletin 2024) the hospital faces significant operational challenges due to uneven distribution of patient load across units. Certain wards—particularly those handling high-risk pregnancies, cesarean deliveries, and complex gynecological cases—experience persistent overcrowding. This imbalance between available beds and patient demand has led to spatial constraints, compromised care quality, and increased pressure on healthcare staff.

In DGH Matale's maternity unit, overcrowding has resulted in limited spacing between beds, which restricts patient mobility, hampers clinical procedures, and elevates the risk of cross-infection. Standard bed designs further exacerbate these issues—particularly for post-operative mothers and antenatal patients—due to inappropriate height, inadequate width, and lack of ergonomic support.

Recognizing these challenges, the maternity team at DGH Matale has initiated a strategic redesign of the bed setup to optimize space and improve care delivery. The proposed solution focuses on achieving 100% functional bed occupancy by reducing the total number of beds while enhancing their usability and adaptability. Key interventions include the introduction of low-height beds to support early mobilization, broader adjustable beds to accommodate both mother and newborn, and spatial reconfiguration to ensure safe distancing and procedural efficiency. These changes are expected to foster a more mother-and-baby-friendly environment, improve patient satisfaction, and reduce staff fatigue.

Moreover, streamlined bed management contributes to better resource utilization, improved patient flow, and heightened responsiveness during peak demand periods (Bartlett et al., 2023). By integrating physical infrastructure with strategic decision-making, DGH Matale aims to elevate the standard of maternal and neonatal care while promoting a more resilient and efficient healthcare system.

➤ General Objective

To evaluate and enhance bed management practices in the maternity unit of District General Hospital Matale in order to optimize resource utilization, improve patient care quality, and ensure continuity of maternal and neonatal services.

➤ Specific Objectives

- To assess the current bed occupancy patterns and identifies disparities in patient distribution across antenatal, labor, postnatal, and gynecology units.

- To analyze the effectiveness of functional strategies such as daily data collection, patient categorization, and inter-ward transfers in managing overcrowding and improving care delivery.
- To propose infrastructure and workflow improvements—including bed design and spatial reconfiguration—that support mother-and-baby-friendly care and enhance staff efficiency and satisfaction.

II. METHODOLOGY

The maternity team at District General Hospital Matala has implemented a series of functional changes aimed at creating an ideal and responsive bed management system. A key strategy involves daily data collection from each unit, including the number of available beds, critical and chronic patients, and those admitted for observation. This information is systematically gathered during the night shift by the night in-charge nursing sister or special grade nursing officer, ensuring accurate and timely updates.

During both day and night rounds, consultant obstetricians and senior house officers assess and categorize patients based on their clinical stability and treatment needs. This categorization enables informed decisions about inter-ward patient transfers to optimize space and care delivery. For example, postnatal mothers who remain hospitalized due to neonatal conditions such as intrauterine growth restriction (IUGR), poor sucking, or jaundice are often transferred to the Mother and Baby Care Unit. If beds are unavailable there, they may be temporarily accommodated in the antenatal ward. Similarly, when the post-caesarean section ward becomes overcrowded, stable patients may be relocated to the gynecology unit.

Patient relocations within the maternity unit are guided by clinical necessity. Priority is given to patients who are not receiving active treatment, followed by those under observation. Clinically stable and uncomplicated cases are selected first to minimize disruption to the receiving ward's routines and to avoid placing undue strain on their staff and resources. Once adequate space becomes available in the original ward, patients are re-relocated to ensure continuity of specialized care. Throughout this process, the maternity team remains mindful of operational harmony, ensuring that all relocations are respectful, seamless, and aligned with the broader goals of patient safety and workflow efficiency.

To support timely admissions and efficient bed utilization, it is essential that the unit in-charge or ward sister communicates bed status updates to both morning and night shift teams on a daily basis. These updates should include the number of vacant beds within the unit, any spill-over arrangements made with adjacent wards, and anticipated discharges, relocations or transfers. In situations involving uncertainty or complex decision-making, staffs are encouraged to consult the unit in-charge, special grade nursing officer, Chief Nursing Officer, or hospital director. This collaborative approach ensures prompt resolution of issues and maintains seamless coordination across departments.

When patients receiving accountable medications are relocated to other wards, the original ward retains clinical responsibility. However, due to the geographical separation of the antenatal, postnatal, and gynecology wards at District General Hospital Matala, direct oversight by the original ward staff is often impractical. To ensure continuity of care, the on-call Visiting Obstetrician and Gynecologist (VOG) assumes clinical responsibility for the relocated patient. The receiving ward staff is entrusted with administering the prescribed medications in accordance with established protocols, thereby maintaining treatment integrity and patient safety.

The maternity unit places strong emphasis on the use of low-height beds to improve accessibility and safety for antenatal and postnatal mothers, many of whom face mobility challenges. For patients requiring intensive care—such as those admitted to the High Dependency Unit (HDU) or recovering from cesarean sections and major gynecological surgeries—multi-functional adjustable beds are utilized. These beds support tailored positioning, enhance patient comfort, and facilitate safer handling during procedures and recovery. In contrast, standard-height beds, while convenient for physicians, often pose difficulties for patients attempting to move independently and increase the physical burden on supportive staff. This can lead to long-term musculoskeletal strain. Therefore, ergonomic bed placement is essential to promote both patient-centered care and staff well-being.

The implementation of a structured and responsive bed management system has resulted in several measurable improvements. It has reduced staff overburden by distributing patient load more evenly across wards, maintained optimal patient-to-provider ratios, and enhanced clinical safety through timely admissions. Additionally, it has minimized resource wastage—such as unnecessary use of bed linen and supplies—and helped control operational costs by preventing inefficient bed occupancy. These outcomes contribute to a more sustainable and effective healthcare delivery model.

The maternity unit at District General Hospital Matala demonstrates a proactive and adaptive approach to bed management in the face of spatial limitations and fluctuating patient demand. Through daily data collection, clinical categorization, strategic patient relocations, and strong leadership support, the team has successfully optimized bed utilization while preserving the quality of maternal and neonatal care. These functional changes have improved operational efficiency, enhanced patient comfort and safety, and increased staff satisfaction. The experience at DGH Matala highlights the critical role of dynamic bed management systems in delivering responsive, equitable, and high-standard healthcare within resource-constrained settings.

This project employed a mixed-method, process-driven approach to redesign and optimize bed management within the maternity unit of District General Hospital (DGH) Matala. The methodology integrated quantitative data

analysis, clinical workflow mapping, and stakeholder engagement to address spatial constraints, uneven bed utilization, and care delivery inefficiencies.

➤ *Baseline Assessment*

Conducted a comprehensive review of existing bed occupancy patterns across antenatal, labor, postnatal, and gynecology wards.

Analyzed historical Bed Occupancy Rate (BOR) data to identify units with persistent overcrowding despite low overall hospital occupancy.

Assessed physical infrastructure, bed design, and spatial layout to determine limitations affecting patient mobility, procedural efficiency, and infection control.

➤ *Daily Bed Utilization Monitoring*

Implemented a structured data collection system during night shifts, led by the night in-charge, nursing sister or special grade nursing officer.

• *Recorded Real-Time Data on:*

- ✓ Available beds per unit
- ✓ Number of critical, chronic, and observational patients
- ✓ Anticipated discharges and relocations
- ✓ Shared updates with morning and night shift teams to support timely decision-making and inter-ward coordination.

➤ *Clinical Categorization and Transfer Protocols*

During daily rounds, consultant obstetricians and senior house officers assessed patient stability and treatment needs.

- Categorized patients to guide relocation decisions, prioritizing
- Non-treatment cases
- Observational admissions Clinically stable postnatal mothers

Relocated patients to appropriate spill-over wards (e.g., Mother and Baby Care Unit, antenatal ward, gynecology unit) based on availability and clinical suitability.

➤ *Infrastructure and Bed Design Optimization*

Introduced low-height beds to support early mobilization and improve accessibility for antenatal and postnatal mothers.

Deployed multi-functional adjustable beds in High Dependency Units and post-operative wards to enhance comfort, safety, and procedural flexibility.

Reconfigured spatial layouts to ensure safe distancing, reduce congestion, and improve workflow efficiency.

➤ *Medication Accountability and Clinical Oversight*

Established protocols for managing patients relocated with accountable medications:

- Original ward retained clinical responsibility.
- On-call Visiting Obstetrician and Gynecologist (VOG) assumed oversight when direct monitoring was impractical.
- Receiving ward staff administered medications per protocol to ensure continuity of care.

➤ *Stakeholder Engagement and Decision Support*

Empowered staff to escalate complex or uncertain relocation decisions to senior leadership, including: Unit in-charge, Special grade nursing officer, Chief Nursing Officer, Hospital director. Promoted collaborative problem-solving and operational transparency across departments.

➤ *Outcome Evaluation*

Monitored key performance indicators post-implementation, including:

- Functional bed occupancy rate Staff workload distribution.
- Patient satisfaction and safety metrics.
- Resource utilization (e.g., bed linen, supplies)
- Cost containment and operational efficiency

Conducted monthly qualitative feedback sessions with staff to assess satisfaction, identify challenges, and refine protocols.

➤ *Study Design*

Mixed-method, process-improvement study combining quantitative bed metrics with qualitative stakeholder feedback.

➤ *Study Setting*

Antenatal, labor, postnatal, and gynecology units of the maternity section, DGH Matala.

➤ *Study Period*

November 2024–August 2025

- Pre-implementation: November 2024–April 2025 (6 months).
- Post-implementation: March 2025–August 2025 (6 months).

➤ *Participants and Sampling*

- Staff sample: 30 participants (medical officers, nursing officers, midwives, healthcare assistants/minor staff).
- Patient sample: 20 participants (women receiving antenatal, intrapartum, or postnatal care; gynecology inpatients).

➤ *Sampling Method*

- Staff: Purposive sampling to ensure representation across shifts and units; maximum variation by role and seniority.
- Patients: Consecutive sampling of eligible inpatients during data-collection Period, ensuring unit representation.

➤ *Inclusion Criteria for Staff*

Staff members who were employed in the maternity section (antenatal, labor, postnatal, or gynecology) during the study period were included.

Only staff who had been working for at least one month of continuous service prior to data collection were considered.

Staff directly involved in bed allocation, patient flow, or bedside care were included in the study.

Participation was limited to staff who provided informed consent.

➤ *Exclusion Criteria for Staff*

Staff members who were on long leave (e.g., maternity or medical leave) during the period of data collection were excluded.

Temporary locum staff with less than one month of service were not included.

Administrative staffs without direct responsibilities for bed management were excluded from the study.

Individuals who declined consent or subsequently withdrew were not considered in the analysis.

➤ *Inclusion Criteria for Patient*

Patients who were admitted to the antenatal, labor, postnatal, or gynecology units during the data collection period were eligible to participate.

Only those who had experienced bed allocation or transfer processes within the maternity section were included.

Participants were required to be 18 years of age or older.

Patients needed to be medically stable at the time of the interview.

Written informed consent was obtained from all participants prior to inclusion in the study.

➤ *Exclusion Criteria for Patients*

Patients who were critically ill or medically unstable at the time of the interview were excluded.

Individuals under 18 years of age who did not have guardian consent were not eligible to participate.

Non-inpatients, such as those attending the outpatient department or day cases without bed allocation, were excluded.

Patients with a language barrier that prevented informed participation without the assistance of an interpreter were not included.

Any individual who declined to provide consent or later chose to withdraw from the study was excluded.

➤ *Data Collection Tool*

Data collection was conducted using semi-structured, interviewer-administered questionnaires for both staff and patients. For staff, the questionnaires captured perceptions of overcrowding, clarity of bed allocation rules, transfer criteria, reliability of documentation, workflow bottlenecks, feasibility of mother–baby co-location, and satisfaction with spatial layout and bed design. For patients, the focus was on privacy, comfort, mother–baby proximity, and perceived safety, timeliness of bed allocation or transfer, and overall satisfaction. In addition to questionnaires, monthly feedback sessions were held at the unit level to debrief staff, identify barriers, test micro-level changes, and refine protocols for improved service delivery.

➤ *Data Analysis*

All quantitative data were analyzed using IBM SPSS Statistics. Bed occupancy rates across antenatal, labor, postnatal, and gynecology wards were compared between the pre-implementation (November 2024–April 2025) and post-implementation (March–August 2025) periods. Normality of data distribution was assessed using the Shapiro–Wilk test. Depending on distribution, paired t-tests or Wilcoxon signed-rank tests were applied to evaluate differences in average occupancy rates, while Repeated Measures ANOVA was used for monthly trend comparisons. Staff and patient satisfaction survey responses, measured on 5-point Likert scales, were analyzed using descriptive statistics (mean, standard deviation, percentages) and non-parametric tests such as the Mann–Whitney U test and Chi-square test for categorical comparisons. Internal consistency of the staff survey was tested using Cronbach’s alpha, and exploratory factor analysis was conducted to identify underlying dimensions of satisfaction. Patient categorical responses (e.g., bed type vs satisfaction) were examined using Chi-square tests, and associations between ordinal variables were explored with Spearman’s rank correlation. Qualitative feedback from open-ended questions was analyzed thematically, with responses coded into categories and summarized by frequency counts to complement quantitative findings.

III. RESULT

Bed Occupancy Trends: Pre- and Post-Implementation Comparison A comparative analysis of bed occupancy rates across four maternity-related wards was conducted

for the periods July–December 2024 (pre-implementation) and March–August 2025 (post-implementation of the strategic inter ward bed management

system). The results demonstrated a marked improvement in utilization across all units:

Table 1 Bed Occupancy Trends – Pre and Post Implementation Comparison

Ward	2024 Avg	2025 Avg	% Change
Antenatal	0.103	0.198	↑ 92%
Postnatal	0.192	0.240	↑ 25%
Labor	0.015	0.058	↑ 287%
Gynecology	0.108	0.157	↑ 45%

These improvements reflect enhanced real-time tracking, reduced mismatch between bed availability and patient demand, and better coordination of patient flow. Notably, the Labor Ward—previously underutilized—experienced a 287% increase in occupancy, attributed to the operationalization of a dedicated emergency operating theatre and improved triage responsiveness.

➤ *Staff Satisfaction with the Relocation System*

A structured survey involving 30 staff members (sample was chosen by systematic random sampling) assessed perceptions of the newly implemented patient relocation protocols. Ten key indicators were evaluated using a 5-point Likert scale. The results are summarized below:

Table 2 Staff Satisfaction with Relocation System

Statement	Avg Score	% (4–5)	Key Insight
Satisfaction with relocation system	3.05	45%	Moderate satisfaction; early adaptation
Improved workflow distribution	3.65	70%	Majority observed workflow enhancement
Low-height beds ease mobilization	4.75	95%	Strong endorsement of bed design
Reduced cleaning workload due to fewer beds	4.75	95%	High satisfaction with workload reduction
Spatial management reduces cross infections	4.45	85%	Effective infection control perceived
Overcrowding has decreased	4.00	75%	Positive impact on ward congestion
Consultant prioritization is fair and appropriate	4.40	85%	High trust in clinical decision-making
Confidence in managing relocated patients	3.90	70%	Staff feel capable under new protocols
Communication between units is timely and effective	4.10	80%	Strong inter-unit coordination
Overall satisfaction with relocation system’s impact on care/workflow	3.70	65%	General approval with room for refinement

Staff feedback highlighted strong satisfaction with bed design, spatial layout, and infection control measures. Communication and consultant-led prioritization were also positively rated. However, initial satisfaction with the relocation system itself was moderate, suggesting opportunities for further staff engagement and protocol refinement.

➤ *Patient Satisfaction with Bed Management and Unit Redesign*

A patient feedback survey was conducted using a semi-self-structured questionnaire, which included one open-ended item inviting suggestions on the inter-ward relocation system. The survey aimed to assess patient comfort, safety, and overall satisfaction following the recent redesign of the maternity wards and the implementation of multifunctional beds. Key findings include:

- Bed Type Used: 30% of patients were placed in multifunctional beds; 70% in standard beds.
- Bed Satisfaction: 50% expressed satisfaction (ratings 4–5); 35% were neutral; 15% were dissatisfied.
- Ease of Mobilization: 50% found it easy to get in/out of bed; 45% struggled—highlighting the need for more low-height beds.
- Preferred Bed Height: 60% preferred low-height

beds; 35% preferred standard height.

- Privacy Satisfaction: 55% were satisfied; 30% neutral; 15% dissatisfied.
- Overcrowding Preference: 65% preferred transfer to another ward rather than waiting without a bed.
- Overall Satisfaction with Bed Management: 50% satisfied; 35% neutral; 15% dissatisfied.

➤ *Qualitative Feedback Revealed Recurring Requests for:*

- Increased availability of adjustable, low-height beds
- Designated beds for each patient until discharge
- Improved infrastructure, including racks and electric fans
- Enhanced comfort and privacy measures

Positive remarks included appreciation for cleanliness, overall care, and ward environment

IV. DISCUSSION

The implementation of a strategic inter ward bed management system and structured patient relocation protocols at the maternity unit of DGH Matala has significantly enhanced inter-ward coordination, resource utilization, and stakeholder satisfaction. Comparative analysis of bed occupancy rates between July–December

2024 and March–August 2025 revealed marked improvements across all four maternity wards. The Labor Ward, previously underutilized, demonstrated a 287% increase in occupancy following the establishment of a dedicated emergency operating theatre and improved triage responsiveness. Similarly, the Antenatal Ward nearly doubled its occupancy rate, while Postnatal and Gynae Wards showed 25% and 45% increases respectively, indicating smoother patient transitions and more efficient discharge planning.

Staff feedback further affirmed the operational success of the intervention. High satisfaction scores were recorded for the introduction of low-height, multi-functional beds, improved spatial layout, and reduced cleaning workload. Over 85% of staff agreed that infection control had improved and communication between units was timely and effective. Consultant-led patient prioritization was viewed as fair and clinically appropriate, and 70% of staff expressed confidence in managing relocated patients under the new protocols. However, initial satisfaction with the relocation system itself was moderate (45%), suggesting the need for continued staff engagement, training, and refinement of workflows to ensure sustained adoption and confidence.

Patient feedback echoed similar themes. While only 30% of patients were placed in multifunctional beds, 60% expressed a preference for low-height designs, citing ease of mobility and safety. Half of the respondents were satisfied with bed comfort and privacy, and 65% preferred being relocated to another ward during overcrowding rather than waiting without a bed—validating the relocation strategy. Qualitative comments emphasized the need for designated beds until discharge, improved infrastructure, and enhanced comfort features such as racks and electric fans.

Collectively, these findings demonstrate that the project has successfully strengthened inter-ward coordination and improved both clinical efficiency and patient-centered care. The integration of digital tracking, spatial redesign, and staff-led relocation protocols has addressed longstanding challenges related to overcrowding, bed mismatch, and workflow fragmentation. Nonetheless, the moderate satisfaction levels in certain areas highlight the importance of iterative refinement, stakeholder engagement, and infrastructure investment to sustain and build upon these gains. The maternity unit at DGH Matale now stands as a model for adaptive, data-driven bed management in resource-limited setting.

V. CONCLUSION

The maternity unit at District General Hospital (DGH) Matale has successfully addressed longstanding operational challenges through the implementation of a structured and responsive bed management system. Despite historically low overall bed occupancy rates, targeted interventions—such as spatial reconfiguration, the introduction of low-height multifunctional beds, and strategic patient relocation protocols—have significantly improved inter-ward coordination, resource utilization, and care delivery.

Quantitative data revealed marked increases in bed occupancy across all wards, while staff and patient feedback highlighted enhanced workflow efficiency, reduced overcrowding, and improved comfort and safety. Daily data collection, clinical categorization, and collaborative decision-making have enabled timely admissions and equitable distribution of patient load, minimizing strain on infrastructure and personnel. These outcomes affirm the project's success in creating a more resilient, patient-centered, and efficient maternity care environment. The experience at DGH Matale underscores the importance of dynamic bed management in optimizing hospital operations and sets a replicable model for other resource-constrained healthcare settings.

RECOMMENDATIONS

Based on the evaluation of bed management practices in the maternity unit of District General Hospital Matale, the following recommendations are proposed to strengthen operational efficiency, enhance patient care, and support staff well-being.

Standardize Bed Monitoring Formalize midnight reporting and introduce a centralized dashboard to track bed availability and occupancy trends.

Improve relocation Decisions Establish clear patient categorization guidelines and promote collaboration among consultants, medical officers, and nursing staff.

Upgrade Bed Infrastructure Replace standard beds with low-height, broader adjustable models to support maternal recovery and neonatal care.

Optimize Ward Layouts Reconfigure bed spacing and enable flexible use of space across maternity sub-units to reduce congestion and improve workflow.

Empower Staff and Leadership Encourage frontline staff to escalate issues and provide regular training to support effective bed management practices.

Ensure Continuous Evaluation Conduct routine audits and gather staff feedback to monitor performance and guide ongoing improvements.

These measures aim to sustain high-quality, patient-centered care while enhancing operational resilience and staff satisfaction.

REFERENCES

- [1]. Bartlett, B. N., Vanhoudt, N. N., Wang, H., Anderson, A. A., Juliar, D. L., Bartelt, J. M., Lanz, A. D., Bhandari, P., & Anil, G. (2023). Optimizing inpatient bed management in a rural community-based hospital: a quality improvement initiative. *BMC Health Services Research*, 23(1), 1–10. <https://doi.org/10.1186/s12913-023-10008-6>

- [2]. De Souza, M. C., Souza, T. A., & Vaccaro, G. L. R. (2016). Hospital bed management: An analysis from the perspective of the theory of constraints. *Espacios*, 37(30).
- [3]. Garcia-Vicuña, D., López-Cheda, A., Jácome, M. A., & Mallor, F. (2023). Estimation of patient flow in hospitals using up-to-date data. Application to bed demand prediction during pandemic waves. *PLOS ONE*, 18(2), e0282331. <https://doi.org/10.1371/journal.pone.0282331>
- [4]. Ranga Sabhapathige, D. D. (2022). Challenges for Health Care In Sri Lanka. *Global Sustainable Healthcare*, September. https://www.researchgate.net/publication/359095619_Challenges_for_health_care_in_Sri_Lanka
- [5]. Tolf, S., Mesterton, J., Söderberg, D., Amer-Wählin, I., & Mazzocato, P. (2020). How can technology support quality improvement? Lessons learned from the adoption of an analytics tool for advanced performance measurement in a hospital unit. *BMC Health Services Research*, 20(1), 1–12. <https://doi.org/10.1186/s12913-020-05622-7>