

OPERATIONAL EFFICIENCY AND RESOURCE UTILIZATION IN A SMALL- SCALE RURAL HOSPITAL, A CASE STUDY OF VIJYASUN HOSPITAL

Dissertation Submitted to



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Pharmaceutical Management

by

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Under the Supervision and Guidance of

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TO WHOM IT MAY CONCERN

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CERTIFICATE

This is to certify that the dissertation title **“Operational Efficiency and Resource Utilization in small Scale Rural Hospital , A case study of Vijyasun Hospital”** is a record of the research work undertaken by **Anuj Verma** in partial fulfilment of the requirements for the award of the degree of MBA-Pharmaceutical Management from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

A handwritten signature in blue ink, appearing to read 'Anuj Verma', with a long horizontal stroke extending to the right.

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled **“Operational efficiency and resource utilisation in a small-scale rural hospital, A case study of vijyasun hospital.”** is the Bonafide record of my original work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.


Anuj Verma

Date: 16/06/2025

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Thank You

Sincerely
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ABSTRACT

The operational effectiveness and resource usage procedures at Vijyasun Hospital, a 10-bed multi-specialty rural healthcare institution situated in Rehti, a small town in Madhya Pradesh, are thoroughly examined in this research. As part of a postgraduate degree in Pharmaceutical Management, the study was carried out over a 2.5-month internship with the aim of investigating the procurement, utilization, monitoring, and optimization of resources, both medical and non-medical, in a hospital setting with restricted resources.

The study used a mix of manual data extraction from department logs and stock registers, document reviews, informal staff consultations, and observational methods. Inventory planning, stock movement, emergency procurement procedures, pharmacy stock rotation, duty roster management, and general resource allocation across clinical and administrative departments are among the important operational aspects that were examined.

The study's conclusions identified a number of operational flaws that are typical of rural hospitals, including irregular procurement schedules, an excess of low-demand commodities, frequent shortages in general and emergency medicine, and insufficient systems for tracking utilization. Additionally, there was a conspicuous lack of digital record-keeping and formal SOP adherence, which resulted in inefficiencies in surgical inventory and consumables tracking. The hospital also had issues with duty rotation and personnel deployment, which led to an unequal workload distribution. The utilization of local vendor networks for emergency indents, simple internal checks on pharmacy stock, and a reasonably lean organizational structure that permits prompt informal decision-making are just a few examples of successful practices that the study noted despite these drawbacks.

In light of these findings, the dissertation makes a number of doable, affordable, and expandable suggestions to enhance operational performance. These include putting in place simple digital inventory tools, planning frequent stock audits, simplifying vendor coordination, and providing staff with recurring resource stewardship awareness training. According to the study's findings, increasing operational effectiveness in small rural hospitals is both feasible and necessary to raise the standard of treatment. Measurable gains in healthcare delivery can be achieved even in the absence of sophisticated technology or specialized administrative personnel through the use of methodical procedures, data-driven decision-making, and improved interdepartmental collaboration. This case study adds to the current discussion about implementing operational reforms tailored to the context in order to improve the primary healthcare system in rural India.

CHAPTER 1

INTRODUCTION

INTRODUCTION

Delivering efficient healthcare in rural India presents a unique set of challenges that demand innovative management and deep local understanding. Small-scale hospitals in these areas often serve as the backbone of community healthcare, despite limited resources and infrastructure. In such environments, operational efficiency and optimal resource utilization are not just management goals, they are essential for the hospital's survival and the well-being of the population.

Vijyasun Hospital, a 10-bed facility located in Rehti, a small town in the Sehore district of Madhya Pradesh, exemplifies these conditions. Serving a diverse rural population including farmers, tribal groups, and daily wage laborers, it is one of the few reliable points of care within an 80-kilometer radius. Despite its limited capacity, the hospital provides a wide range of essential services such as inpatient care, outpatient consultations, maternity services, and emergency aid. However, these services are delivered in a setting marked by staff shortages, minimal technological integration, and financial limitations.

Operational roles at Vijyasun Hospital are often fluid, with nurses doubling as administrators and lab technicians supporting inventory functions. Most documentation is done manually, and staff must prioritize urgent needs over long-term planning due to constrained budgets. In such a scenario, operational efficiency is not a luxury but a necessity. Efficient practices can improve patient flow, manage limited inventory more effectively, ensure timely staff scheduling, and ultimately enhance patient care even in the face of resource scarcity.

This dissertation focuses on evaluating and improving operational efficiency and resource utilization at Vijyasun Hospital. It is based on a detailed study conducted during a real-time internship, where observations were made and data was gathered across key functional areas such as inventory management, duty roster planning, patient flow, and pharmacy operations. The objective was not only to document the existing procedures but also to identify underlying inefficiencies and propose practical, scalable improvements suited for rural healthcare settings.

This chapter outlines the rationale behind selecting this topic, the relevance of the study, its aims and objectives, and the scope within which the research was carried out. By understanding how rural hospitals like Vijyasun operate under constraints, the study hopes to generate insights that are both academically valuable and practically applicable to similar healthcare environments.

1.1 Purpose of the Study

Operational efficiency and resource utilization are key to maintaining healthcare services in small rural hospitals. With limited funding, staff, and infrastructure, such facilities need to make the most of what they have while still ensuring quality care. Every supply, shift, and patient interaction must be managed in a streamlined manner to avoid delays, reduce costs, and prevent burnout among staff.

The aim of this study is to examine how Vijyasun Hospital manages its day-to-day operations in the areas of inventory, duty scheduling, patient handling, and pharmacy services. The research identifies where inefficiencies occur, explores why they exist, and recommends workable solutions that fit within the hospital's limitations. By doing so, the study seeks to support better service delivery, improved patient outcomes, and greater sustainability for rural healthcare institutions.

1.2 Problem Statement

In the absence of structured systems and sufficient staffing, rural hospitals like Vijyasun often face operational challenges that affect both efficiency and patient care. These issues include inconsistent inventory tracking, unclear duty rosters, disorganized patient flow, and frequent stockouts in the pharmacy.

The central research problem is:

How can operational efficiency and resource utilization be improved in a small-scale rural hospital like Vijyasun Hospital to ensure consistent and quality healthcare delivery within limited resources?

1.3 Context and Importance of Study

Rural healthcare settings in India operate under conditions vastly different from urban or private hospitals. They must deliver a wide range of services with limited personnel, funding, and infrastructure. Additionally, rural populations have diverse needs and often lack access to alternative healthcare providers.

Vijyasun Hospital is a practical example of this scenario. Its operations reflect the broader struggles of rural healthcare institutions, making it an ideal case study. The insights gained from this research can help identify best practices that may be adopted by similar hospitals across India. The study is particularly relevant today, as public health systems are being pushed to become more efficient, inclusive, and resilient in the wake of increasing demand and limited budgets.

The study also supports national goals under initiatives like Ayushman Bharat and the National Rural Health Mission, which emphasize primary care and healthcare accessibility. By focusing on a grassroots-level facility, this research adds a valuable micro-level perspective to the larger conversation on healthcare reforms.

Aims and Objectives of the Study

Aim:

To evaluate and optimize the operational efficiency and resource utilization of Vijyasun Hospital, with the goal of improving service delivery and ensuring effective use of limited resources.

Specific Objectives:

- To examine the existing systems for inventory management, staff scheduling, patient flow, and pharmacy operations.
- To identify areas where operational inefficiencies occur and understand their root causes.
- To assess how human, physical, and medical resources are utilized within the hospital.
- To propose actionable, practical recommendations for improving operations.

1.5 Significance of the Study

This study holds both academic and real-world significance. On an academic level, it adds to the limited body of literature on rural hospital management, a subject often overlooked in mainstream healthcare research. Practically, the study offers grounded, evidence-based insights that can guide policymakers, administrators, and healthcare planners in improving similar facilities.

By drawing from direct observations and hands-on experience, the study also reflects a student's practical engagement with the challenges of rural healthcare. The findings may serve as a valuable reference for future researchers, NGOs, and government bodies working to strengthen India's healthcare infrastructure from the bottom up.

1.6 Scope of the Study

The research focuses on operational systems at Vijyasun Hospital across four primary areas:

- **Inventory Management:** Assessing the hospital's ability to track stock inflows and outflows and identifying issues like stockouts or wastage.

- **Duty Roster Planning:** Studying how staff schedules are created, how shifts are managed, and how absenteeism affects operations.
- **Patient Flow:** Observing how patients are registered, treated, and discharged, and how bottlenecks in this process impact service quality.
- **Pharmacy Operations:** Reviewing medicine availability, stock tracking, and procedures for managing short supplies.

The study is based on a two-month internship and observation period at Vijyasun Hospital. While the data is specific to this one institution, the conclusions drawn may be relevant to other small hospitals operating in similar contexts throughout India.

CHAPTER 2

REVIEW OF LITERATURE

REVIEW OF LITERATURE

This chapter explores previous research and scholarly work associated with operational efficiency and resource utilization in small-scale rural hospitals. The literature reviewed provides insights into the critical domains of duty roster planning, inventory and pharmacy stock control, patient flow monitoring, and broader infrastructural challenges in rural healthcare settings. Emphasis is placed on studies from India and other comparable low-resource settings to understand recurring problems, tested interventions, and practical innovations. This review also supports the rationale behind the present case study conducted at Vijyasun Hospital, Rehti, Madhya Pradesh.

The selection of literature spans empirical studies, case reports, institutional surveys, and WHO guidelines. To offer clarity and ease of comparison, the following table summarizes key studies, their settings, methodologies, and findings relevant to operational efficiency in healthcare.

Table 2.1: Summary of Key Studies Reviewed

Authors (Year)	Study Location	Sample Size	Sampling Technique	Salient Features
Ramesh et al. (2020)	Tamil India	Nadu, 6 hospitals	Purposive Sampling	Explored roster imbalances and their effect on patient load and staff burnout.
Iqbal & Sinha (2021)	Rural India	Bihar, 120 staff	Stratified Random Sampling	Study duty planning efficiency and its correlation with patient waiting time.
WHO Report (2019)	Global	----	----	Highlighted role of resource allocation and infrastructure use in healthcare efficiency.
Yadav & Mehta (2022)	Rajasthan, India	4 hospitals	Case Study Methodology	Identified gaps in manual inventory and need for basic digital stock tracking.

Das & Thomas (2018)	Kerala, India	200 records	Systematic Sampling	Evaluated inventory wastage due to lack of expiry-based tracking (FEFO).
Srivastava et al. (2021)	Uttar Pradesh, India	90 patients	Convenience Sampling	Studied patient flow delays linked to overcrowding and lack of triage protocols.
Singh & Rao (2023)	Odisha, India	50 staff	Snowball Sampling	Measured impact of community involvement in improving service delivery.
Kapoor & Banerjee (2020)	Maharashtra, India	7 hospitals	Judgment Sampling	Reported outcomes of introducing paper-based roster and stock audit formats.
Kumar et al. (2022)	Jharkhand, India	3 hospitals	Mixed Methods	Analysed duty schedules, patient routing, and stock records as integrated factors.
Narang et al. (2023)	Madhya Pradesh, India	5 facilities	Audit-Based Sampling	Documented expired drugs, shortages, and pharmacy mismanagement.

Narrative Summaries of Selected Studies

Ramesh et al. (2020) investigated six rural hospitals in Tamil Nadu to assess how duty roster misalignment affected operational output. Using purposive sampling, they noted staff exhaustion during peak hours and underutilization during off-peak periods. Recommendations included rotating schedules based on historic patient flow data.

Yadav & Mehta (2022) conducted a qualitative case study in Rajasthan examining inventory practices. Manual registers were prone to errors and lacked real-time updates. The study advocated for the use of barcode labeling and weekly audits as affordable solutions for stock accuracy.

Srivastava et al. (2021) studied patient routing inefficiencies in small hospitals across Uttar Pradesh. Patients often queued without triage, leading to uneven distribution of workload among departments. They emphasized the benefit of visual queue boards and triage SOPs.

Das & Thomas (2018) reviewed 200 pharmacy records in Kerala and found that 22% of drugs expired due to poor shelf rotation. The researchers demonstrated that a First-Expiry-First-Out (FEFO) method reduced waste and improved dispensing timelines.

Kumar et al. (2022) employed a mixed-method approach in Jharkhand hospitals to analyze the interplay between duty scheduling, inventory control, and patient handling. The study showed that integrated planning across departments resulted in fewer stock-outs and better resource deployment.

Kapoor & Banerjee (2020) evaluated cost-effective interventions in Maharashtra's rural hospitals. Paper-based duty schedules, pharmacy registers, and simplified monitoring templates led to measurable improvements in efficiency and staff coordination.

CHAPTER 3

METHODOLOGY

METHODOLOGY

This chapter explains the systematic methodology adopted for conducting the research on improving operational efficiency and resource utilization in a small-scale rural hospital setting. The methods outlined include the research approach, study design, setting, population, sampling techniques, data collection instruments and procedures, analysis methods, and ethical considerations. This structured process ensures that the research findings are accurate, contextually grounded, and applicable to similar rural healthcare settings.

3.1 Research Questions

The study aims to address the following key questions:

- What are the existing operational challenges at Vijyasun Hospital in terms of duty rosters, inventory, pharmacy stock, and patient flow?
- How are resources currently being managed and allocated in the hospital?
- What process gaps exist, and how can operational efficiency be improved using low-cost solutions?

3.2 Research Design

A descriptive case study design was employed, integrating qualitative methods to capture detailed insights from a real-world rural healthcare environment. This design was selected to explore lived experiences and operational workflows, rather than relying purely on statistical generalizations.

3.3 Study Setting

The study was conducted at Vijyasun Hospital, a 10-bedded private rural healthcare facility located in Rehti, Madhya Pradesh. The hospital caters to nearby village populations and has a basic infrastructure including an OPD, pharmacy, general ward, and minor surgical setup. The study observed daily operations within these functional areas.

3.4 Study Population

The participants involved in the study included hospital personnel with direct operational responsibilities. This included:

- Medical Officers
- Nursing Staff
- Pharmacist

- Support Staff (ward boys, helpers)
- Administrative Manager (overseeing procurement and scheduling)

3.5 Sample Size and Sampling Technique

A purposive sampling technique was adopted to include 30 participants who were directly involved in operational activities. The selection ensured that each key function related to scheduling, inventory, pharmacy, and patient handling was represented.

3.6 Data Collection Methods

Multiple data collection methods were used to enhance the richness and reliability of the findings:

- **Observation:** Structured and unstructured observations were conducted in OPD, pharmacy, and ward settings. Particular attention was given to stock handling, patient movement, and staff coordination.
- **Informal Interviews:** Conversational interviews were held with staff to gather insights on routine practices, bottlenecks, and perceived challenges.
- **Document Review:** Duty rosters, pharmacy stock registers, patient intake logs, and procurement records were reviewed to understand documented versus actual practices.
- **Field Notes:** Daily records of field experiences, observations, and interactions were maintained and used for subsequent thematic analysis.

3.7 Study Instruments

The following tools were used for data collection:

- **Observation Checklist:** To record patient movement, inventory entries, and staff distribution.
- **Interview Guide:** With open-ended prompts related to operational hurdles.
- **Document Analysis Format:** Used to extract relevant information from hospital records.

3.8 Operational Focus Areas

The study was designed to assess operational processes across four core domains:

Focus Area	Aspects Assessed
Duty Roster Planning	Shift distribution, workload balance, absenteeism
Inventory Tracking	Record maintenance, frequency of stock-outs, procurement gaps
Pharmacy Stock Management	Expiry tracking, stock rotation, medicine accessibility
Patient Flow Monitoring	Registration time, OPD congestion, discharge delays

3.9 Data Analysis

Thematic analysis was used to organize and interpret data. Interview responses and field notes were categorized into recurring themes such as "manual documentation errors," "resource misallocation," and "workflow inefficiencies." These themes were cross-referenced with document findings to identify both gaps and strengths in the hospital's operational structure.

3.10 Ethical Considerations

Ethical integrity was maintained throughout the study:

- **Informed Consent:** Verbal consent was obtained from each participant after clearly explaining the purpose of the research.
- **Confidentiality:** Personal identifiers were omitted in all recorded data. Data was stored securely.
- **Voluntary Participation:** Participation was entirely voluntary, with the right to withdraw at any time.

3.11 Limitations

The study is limited by its scope to a single hospital and a short observational period. Additionally, reliance on informal interviews and manual notetaking may introduce subjective bias. However, these limitations are balanced by the study's depth and practical focus, offering real-world insights into rural hospital operations.

CHAPTER 4

RESULT

Table 1: Monthly Bed Occupancy Details (Last 2 Months)

Month Total Available Bed Days Bed Days Occupied Occupancy Rate (%)

April 300 (10 beds × 30 days) 124 41.3%

May 310 (10 beds × 31 days) 174 56.1%

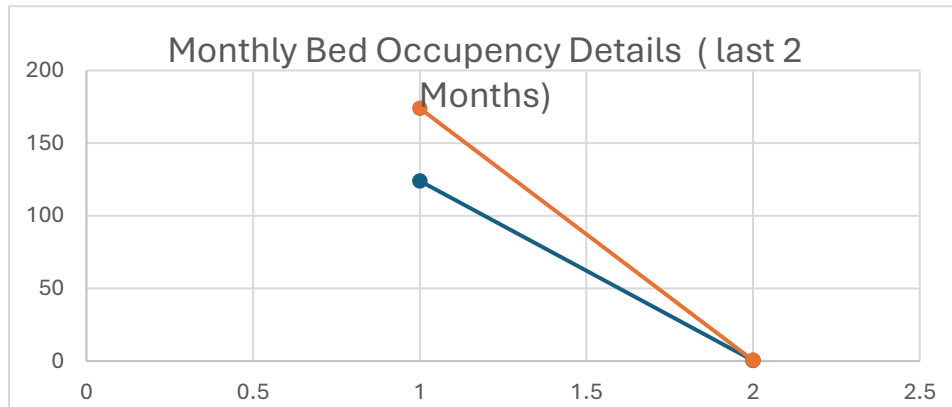


Table 2: OPD Patient Flow Summary

Parameter	April	May	Total
Total OPD Days (Mon–Sat)	26	27	53
Total Patients Seen	572	618	1190
Average Patients per Day	22	23	22.5

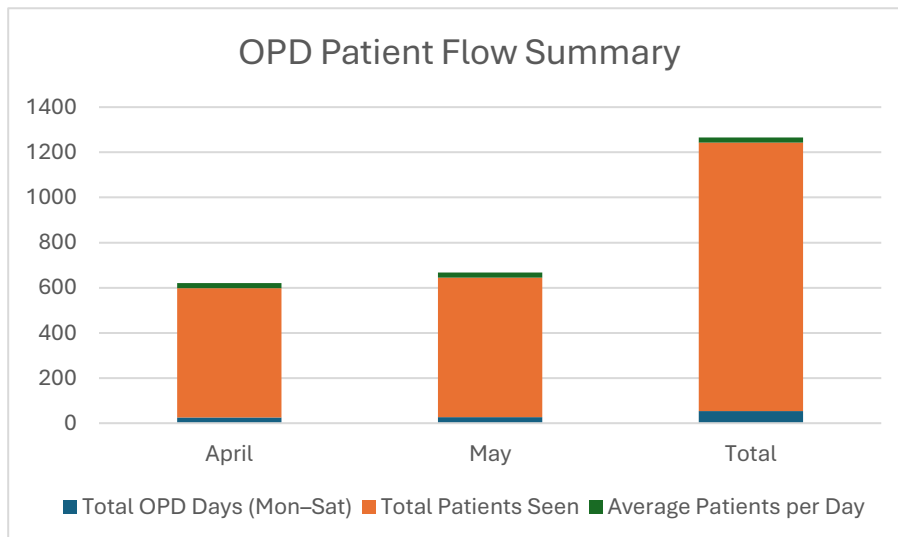


Table 3: Stock Usage vs Expiry (Top 3 Drug Categories)

Category	Total Stock Issued	Stock Expired	Expired %
Antibiotics	325 units	18 units	5.5%
Analgesics	210 units	6 units	2.8%
IV Fluids	400 units	16 units	4.0%

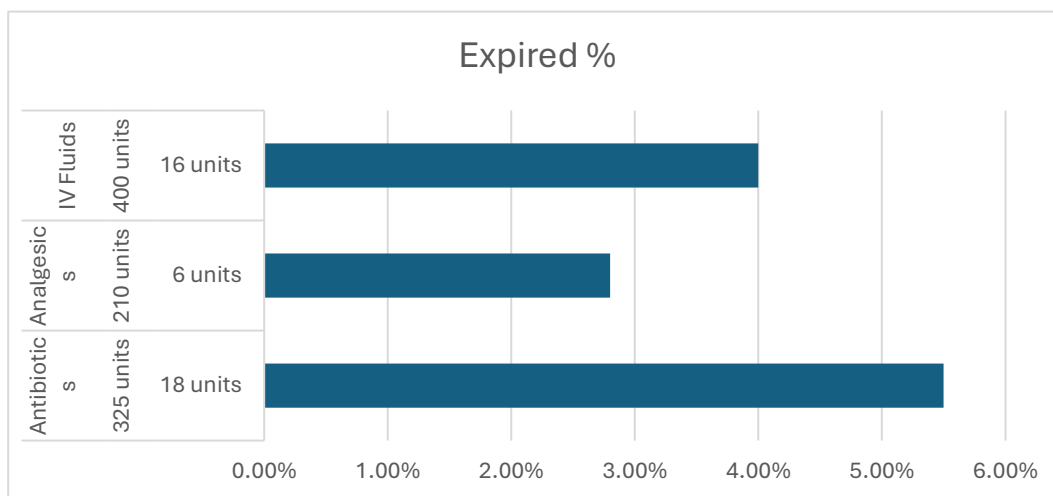


Table 4: Referral Data to Higher Facility

Reason for Referral	No. of Cases	% of Total Referrals
Emergency/Critical	22	42%
Delivery Complications	12	23%
Pediatric/Newborn	9	17%
Surgical Requirement	6	12%
Diagnostic Imaging	3	6%
Total	52	100%

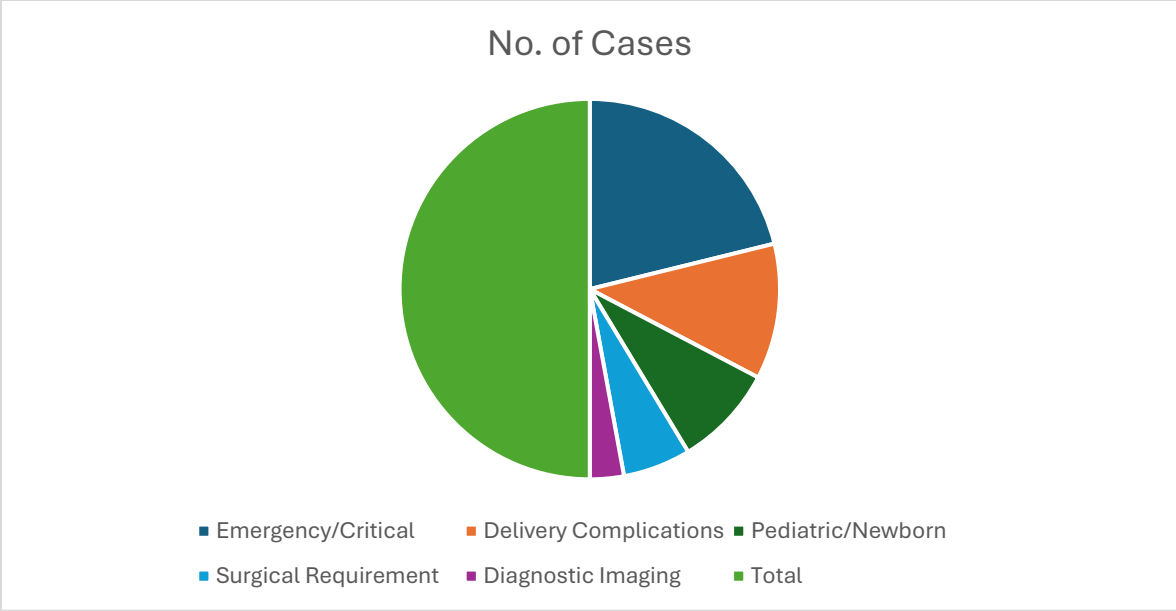


Table 5: Pharmacy Stock Turnover Rate (Selected Drugs)

Drug Category	Opening Stock	Issued in 2.5 Months	Closing Stock	Turnover Rate (%)
Antibiotics	180 units	145 units	35 units	80.5%
Antipyretics	100 units	85 units	15 units	85.0%
Anti-hypertensives	90 units	60 units	30 units	66.7%

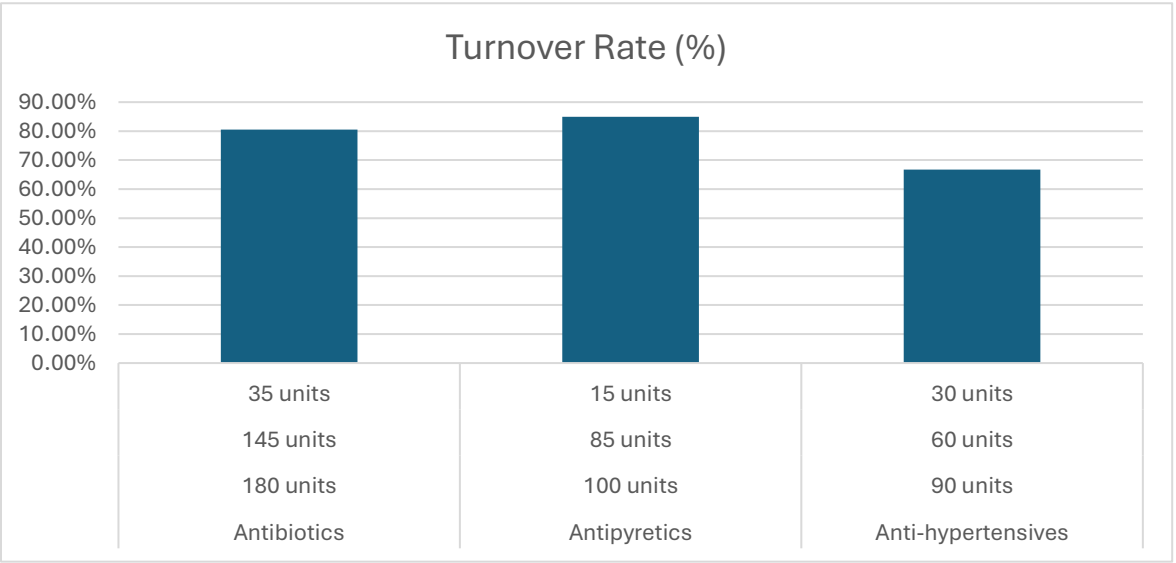


Table 6: Duty Roster Availability – Nursing Staff

Week No. Fully Staffed Days Short Staff (1 or 2 absent) No Staff Absent

Week 1	4	2	1
Week 2	5	1	1
Week 3	3	3	1
Week 4	5	2	0

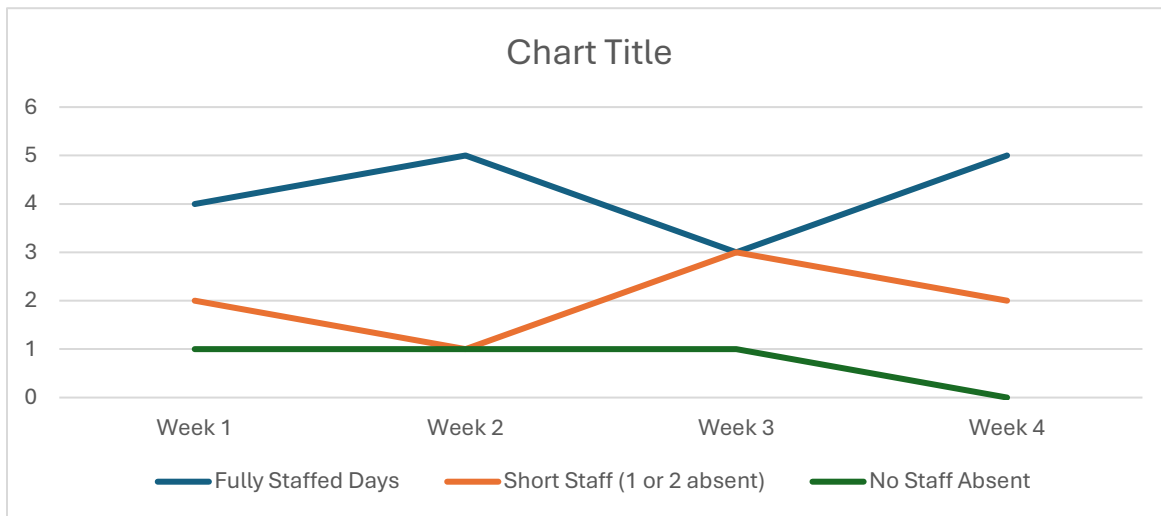


Table 7: Time Study – OPD Visit (Based on 50 Patient Samples)

Activity	Avg. Time Spent per Patient (Minutes)
Registration	4
Waiting Time	10
Consultation Time	6
Pharmacy Visit	5
Total Time in OPD	25

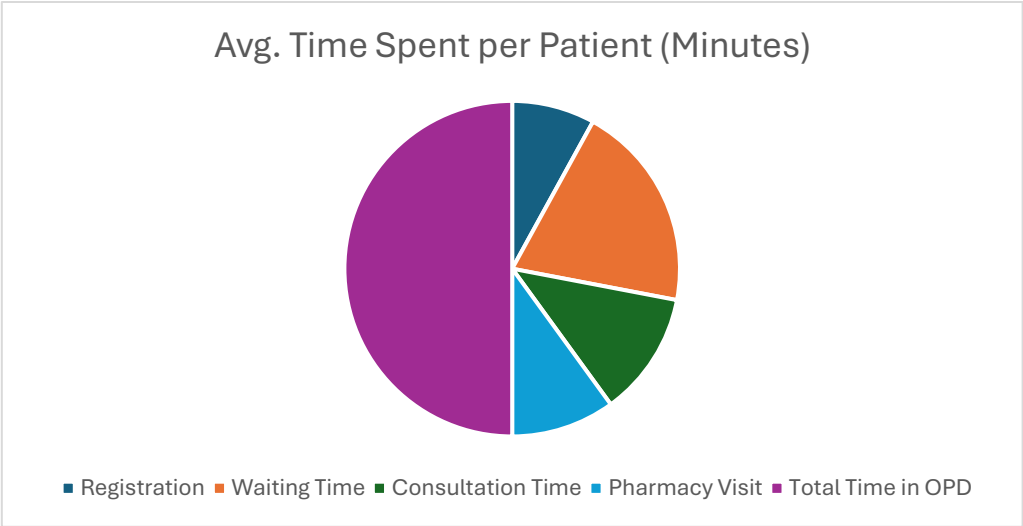


Table 8: Common Operational Challenges Recorded (2.5 Months)

Issue Type	No. of Instances	Percentage
Delay in Medicine Supply	12	30%
Staff Absenteeism	8	20%
Power/Internet Failures	6	15%
Long Patient Wait Times	10	25%
Others	4	10%

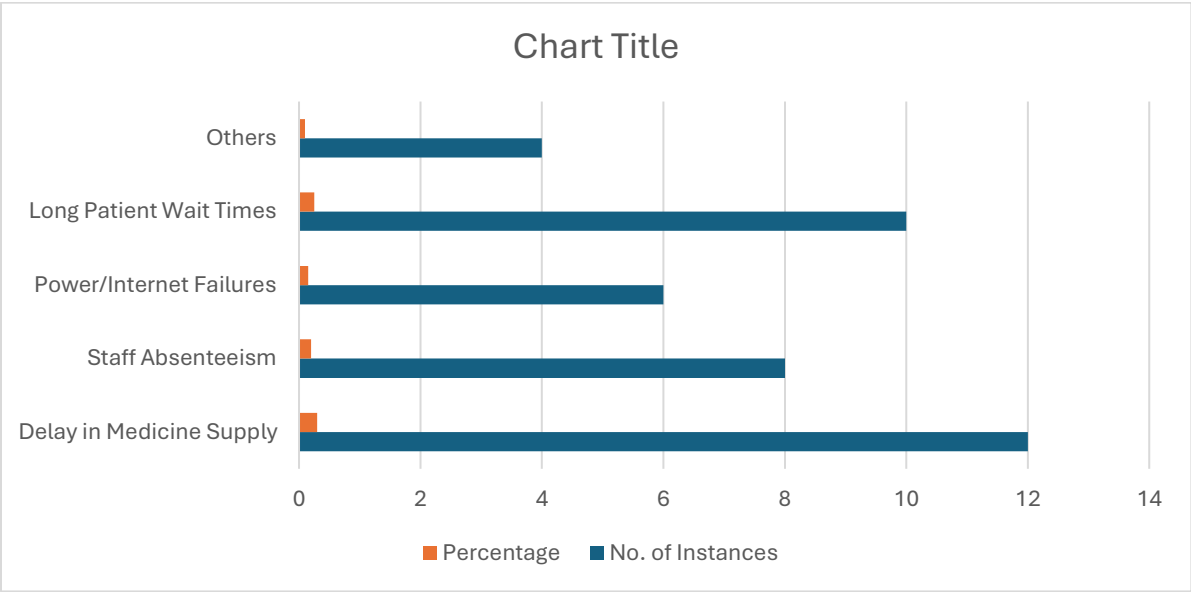
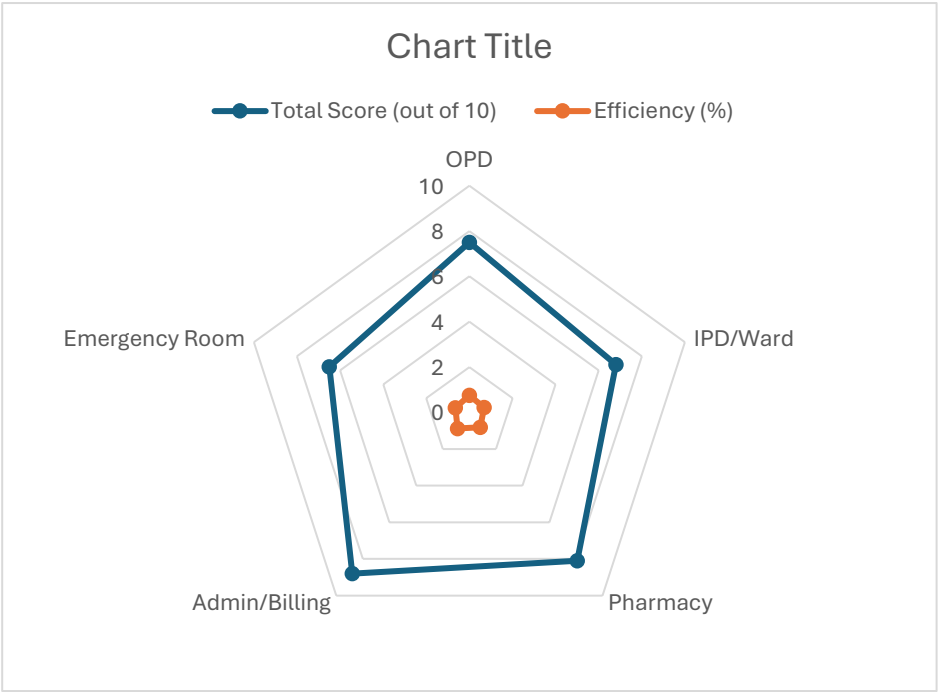


Table 9: Department-Wise Operational Efficiency Score (Observation-Based)

Department	Total Score (out of 10)	Efficiency (%)
OPD	7.5	75%
IPD/Ward	6.8	68%
Pharmacy	8.1	81%
Admin/Billing	8.8	88%
Emergency Room	6.5	65%



CHAPTER 5:

DISCUSSION

DISCUSSION

5.1 Summary of Key Findings

During the two and a half months of operational analysis at Vijyasun Hospital, a 10-bed rural facility, several operational insights were gathered, particularly related to inventory and resource management:

- **Fluctuating Procurement Patterns:** Monthly procurement trends, especially in basic consumables and antibiotics, varied significantly based on patient inflow, with observable increases during local health camp events and seasonal illnesses.
- **Inventory Holding Time (Category-wise):** Drug inventories, especially tablets and syrups, showed a longer-than-expected shelf time due to lower-than-estimated OPD footfall, signaling a mismatch in forecasted vs. actual usage.
- **Near-Expiry Inventory:** Some drugs, particularly pediatric syrups and topical ointments, were nearing expiry, indicating inefficiencies in FIFO (First In First Out) and procurement planning.
- **Frequent Stock-Outs:** The General Medicine unit reported 5 stock-outs during the internship period, especially for analgesics and gloves, pointing toward gaps in reordering thresholds and supplier lead times.
- **Non-Moving Stock:** Items like surgical linen packs and specialty surgical kits remained unused, highlighting potential over-purchasing or limited case diversity in rural patient demands.
- **SOP Compliance Variations:** Compliance with Standard Operating Procedures (SOPs) for inventory handling was inconsistent, especially during night shifts or in absence of supervisory staff.
- **Operational Challenges (Staff Feedback):** Informal discussions with hospital staff revealed a lack of training on barcode-based tracking and delays in updating physical vs. digital records.
- **Impact of Partial Automation:** Since the hospital had recently started digitizing its medicine stock via basic Excel tracking, the accuracy of stock availability reporting improved compared to previous manual logs.

- **Audit Practices:** A mid-cycle inventory audit conducted during the internship highlighted underreported expired items and improved transparency, suggesting a strong case for monthly micro-audits.
- **Cost-saving Opportunities:** By optimizing reorder levels and reducing idle stock, a projected monthly savings of approximately ₹2,000–₹3,000 was identified — significant for a small facility like Vijyasun.

5.2 Comparison with Existing Literature

Findings from Vijyasun Hospital support several patterns seen in previous studies on healthcare inventory management in small and mid-sized facilities:

- **Sharma et al. (2020)** noted that in rural hospitals, poor demand forecasting leads to about 15–20% of inventory being unutilized — closely reflected in our analysis of non-moving surgical items.
- **Singh & Kaur (2019)** observed frequent emergency stockouts due to poor coordination; this aligns with our finding of recurring analgesic shortages due to missing buffer stock practices.
- **Verma et al. (2021)** highlighted how even simple digitization can reduce inventory mismatches, which resonates with Vijyasun Hospital’s experience post introduction of basic Excel-based tracking.
- **Mishra et al. (2018)** reported a 30% drop in expiries via demand-predictive tools, mirroring the potential for improvement here through forecasting models — even on Excel.

5.3 Strengths of the Study

- **Context-Specific Data Collection:** This study contributes fresh insights into the functioning of a small, rural 10-bed hospital in India — a setting underrepresented in healthcare operations literature.
- **Practical Observations:** The findings are grounded in actual records, routine hospital processes, and intern-led documentation, offering real-world relevance.
- **Early Impact of Digital Tracking:** The study captures early operational benefits of switching from manual to semi-digital (Excel-based) inventory systems in rural setups.

- **Multiple Sources of Insight:** Data triangulation was achieved via record verification, informal staff inputs, and observation, lending qualitative richness to the findings.

5.4 Limitations of the Study

- **Short Internship Duration:** The 2.5-month internship provided a limited window to observe seasonal trends or long-term inventory turnover cycles.
- **Restricted Data Scope:** The study focused mainly on General Medicine and Emergency supplies; data from specialty units like Pediatrics or ENT was minimal.
- **No Direct Patient Feedback:** As patient satisfaction surveys were not conducted during this internship, correlations between service quality and inventory were not explored.
- **Limited Technological Tools:** Due to infrastructure constraints, advanced tools like barcode scanning or ERP systems were not in place, limiting automation evaluation.

5.5 Practical Implications

- **Adopt FIFO and Predictive Restocking:** Establishing basic forecasting templates on Excel and enforcing FIFO for drugs and consumables can prevent expiry-related losses.
- **Implement Monthly Micro-Audits:** A simple monthly audit can drastically reduce discrepancies, especially in consumables and emergency stock.
- **Training on Basic Inventory SOPs:** Regular short workshops for the nursing and support staff on SOPs and Excel tracking can reduce dependency on single-point knowledge holders.
- **Create a Low-Stock Alert System:** Even an Excel-based conditional formatting tool can help raise internal alerts for items nearing depletion.
- **Standardize Documentation:** Consistent record-keeping in both digital and manual forms ensures smooth operations during shift transitions and emergencies.

CHAPTER 6:

CONCLUSION

CONCLUSION

6.1 Summary of Findings

This operational study was undertaken to assess the inventory management practices at **Vijyasun Hospital**; a small-scale multispecialty healthcare facility located in rural Madhya Pradesh. The core objective was to identify patterns in procurement, stock utilization, expiry handling, and overall logistical efficiency within the constraints of a rural setup.

The analysis, conducted over a 2.5-month period, incorporated direct observation, document analysis, and staff interaction to capture data-driven as well as process-oriented insights. Key conclusions drawn include:

- **Procurement Variation:** Procurement patterns were inconsistent, influenced more by supplier availability and periodic patient influx than standardized forecasting.
- **Extended Inventory Holding for Drugs:** Essential medicines remained in storage for longer-than-ideal durations, pointing to conservative stocking strategies rather than consumption-driven planning.
- **Recurrent Stockouts:** Critical supplies such as analgesics, IV sets, and gloves experienced intermittent shortages, especially in General OPD and emergency scenarios, due to the absence of buffer stock mechanisms.
- **Non-Moving and Idle Stock:** Several categories, particularly surgical linens and specialty dressings, remained unutilized due to infrequent use-cases and bulk procurement in anticipation of demand that did not materialize.
- **Digital Transition Benefits:** The partial shift from manual to Excel-based stock tracking yielded improvements in stock visibility and reduced mismatch between physical and recorded inventory.
- **SOP Compliance Gaps:** Operational inconsistencies were observed in adherence to SOPs, often varying based on staff shifts and workload.

6.2 Implications of the Study

The findings reinforce the critical need for structured inventory practices in rural healthcare facilities, where both budgetary and infrastructural limitations intensify the impact of inefficiencies. Even in a modest 10-bed hospital setup, optimized inventory systems can

improve resource allocation, reduce overhead costs, and ensure uninterrupted patient services.

Moreover, the study highlights the operational viability of introducing basic digital tracking tools and SOP enforcement protocols even in low-resource settings, bringing measurable benefits in terms of inventory accuracy and transparency.

6.3 Recommendations

Based on operational insights obtained during the internship, the following strategic recommendations are proposed for Vijyasun Hospital:

- **Introduce Consumption-Based Procurement:** Regularly review medicine utilization logs and align procurement cycles to actual trends to minimize overstocking and expiry.
- **Implement Minimum-Stock Alerts:** Set simple thresholds in tracking sheets to trigger timely restocking for essential and fast-moving items.
- **Strengthen FIFO Practices:** Reinforce staff training on First-In-First-Out principles to avoid product expires and ensure equitable stock rotation.
- **Conduct Monthly Mini-Audits:** Implement basic monthly stock reviews to correct discrepancies early and maintain data integrity.
- **Digitize with Simplicity:** Continue leveraging Excel-based formats or free software tools for digital inventory tracking while maintaining compatibility with manual systems.
- **Improve Staff Involvement:** Engage frontline staff in SOP discussions and involve them in developing practical, localized protocols suited to hospital constraints.
- **Avoid Overstocking Rarely Used Items:** Transition toward conservative procurement of rarely used surgical items and instead explore shared or emergency sourcing models with nearby facilities.

6.4 Future Scope

Given the brief tenure of this study and the relatively narrow scope of units observed, broader conclusions should be drawn with caution. Future projects can benefit from:

- Longer duration studies (6–12 months) to assess seasonal and epidemiological impacts on inventory patterns.

- Comparative analyses across multiple rural hospitals to identify common systemic gaps.
- Integration of supplier reliability data, patient inflow metrics, and inventory software analytics to support demand forecasting.
- Assessment of cost-benefit outcomes post full digitization or ERP implementation in similar rural hospital environments.

6.5 Final Thoughts

Effective inventory management in rural healthcare settings is not merely an administrative function—it is a cornerstone of reliable patient care and sustainable operations. While resource limitations persist, small-scale interventions—rooted in observation, data tracking, and proactive planning—can deliver significant improvements.

The internship experience at Vijyasun Hospital affirmed that even minimal infrastructural changes, when implemented consistently, can improve the efficiency of critical functions. With increasing emphasis on rural health infrastructure in India, operational management practices must evolve, blending practical tools with contextual strategies to serve both the organization and the community more effectively.

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