# STRENGTHENING OPERATIONAL PROCESS TO ENHANCE FINANCIAL OUTCOMES AT SAHYADRI HOSPITAL

Dissertation Submitted to

**The IIHMR University, Jaipur**

for the partial fulfillment for the award of the degree of

Master of Business Administration (MBA)

in

**Hospital and Health Management**

by

**Disha Kumari**

Under the Supervision and Guidance of

**Dr. Sanjay Gupta**

**2025**

Appendix E: Completion Certification

Sahyadri HOSPITALS

# CERTIFICATE

This is to certify that **Dr. Disha Kumari** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her Dissertation at Sahyadri Hospitals Private Limited, Corporate Office during 10th March to 31st May 2025. Project done on "Strengthening operational process to Enhance Financial outcomes at Sahyadri Hospitals"

Place Pune

Date 5/6/25

**For Sahyadri Hospitals Pvt Ltd.,**

Vijeta Kulkarni

**Mrs Vijeta Kulkarni**
**General Manager – Human Resources**

IIHMR UNIVERSITY

# CERTIFICATE

This is to certify that dissertation titled **Strengthening operational Process to enhance Financial Outcomes at Sahyadri Hospital** is a record of the research work undertaken by **Dr. Disha Kumari** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

Dr. Sanjay Gupta
Faculty Guide

IIHMR University, Jaipur

Date 12-06-25

Dr. Sanjay Gupta
School Dean

IIHMR University, Jaipur

Date 12-6-25

## DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Strengthening operational processes to enhance financial outcomes at Sahyadri hospitals** is the Bonafide record of my original research 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Disha
(Signature)

Name of Student: Dr. Disha Kumari

Date: 12-6-25

## Abstract

Revenue Cycle Management (RCM) is a critical component for maintaining the financial sustainability of hospitals. This study was conducted at Sahyadri Hospital, Kothrud branch, to identify operational inefficiencies that contribute to revenue leakage and impact financial performance. A mixed-methods approach was adopted, analysing both quantitative financial metrics and qualitative inputs from department observations across Billing, Discharge, and Insurance departments. A sample size of 282 cases over 3 months (March–May) was analysed using audit reports, billing data, TAT metrics, and DSO calculations.

Key findings highlighted that billing turnaround time (TAT) consistently exceeded the NABH standard of 2 hours, averaging 3 hours and 45 minutes. Insurance claim denials reached as high as 45% in April, well above the standard 10% threshold, primarily due to documentation errors, coverage misunderstandings, and policy-related exclusions. The Discharge department showed interdepartmental coordination challenges, while Accounts Receivable (AR) analysis revealed that although government and TPA dues reduced, outstanding amounts from lab clients and Indus segments increased. DSO improved from 33 to 29 days, indicating better collection efforts.

In conclusion, the study establishes that minor operational delays cumulatively lead to significant financial setbacks. It recommends streamlining interdepartmental workflows, automating billing and discharge processes, strengthening denial management, and improving insurance literacy among patients. These interventions are essential to enhance financial outcomes and operational efficiency in a competitive healthcare environment.


**Keywords**: Revenue Cycle Management, Claim Denial, Billing Turnaround Time, Days Sales Outstanding, Financial Leakage

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## ACKNOWLEDGEMENTS

First and foremost, I express my deepest gratitude to the Almighty for His blessings and guidance throughout my journey.

I am sincerely thankful to Sahyadri Hospital for providing me with the opportunity to undertake my dissertation. Working alongside such experienced professionals was both an honor and a valuable learning experience.

I extend my heartfelt appreciation to Ms. Deepali D and Ms. Dhanashree Nikam for their unwavering support and guidance during my research. Their mentorship was instrumental in navigating the challenges I encountered.

A special thanks to the entire Finance Team for their encouragement and assistance, especially during challenging times. Their support significantly contributed to the successful completion of my project.

I am profoundly grateful to my mentor, Dr. Aashish Bandhu (Professor, IIHMR University, Jaipur), for his continuous guidance and insightful feedback throughout my study.

Lastly, I would like to express my deepest appreciation to my family for their constant encouragement and support, which motivated me to persevere and complete this study.

Sincerely,

Dr. Disha

Place: Pune

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## ABBREVIATIONS

| Abbreviation | Full Form |
|---|---|
| RCM | Revenue Cycle Management |
| AR | Accounts Receivable |
| DSO | Days Sales Outstanding |
| NABH | National Accreditation Board for Hospitals |

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| | |
|---|---|
| OPD | Outpatient Department |
| IPD | Inpatient Department |
| TPA | Third Party Administrator |
| EMR | Electronic Medical Record |
| EHR | Electronic Health Record |
| SOP | Standard Operating Procedure |
| KPI | Key Performance Indicator |
| TAT | Turnaround Time |
| ICD | International Classification of Diseases |
| CPT | Current Procedural Terminology |
| HCPCS | Healthcare Common Procedure Coding System |
| MRD | Medical Records Department |

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# ORGANISATION PROFILE

## SAHYADRI HOSPITALS


**Figure 1.1 : Sahyadri Hospital**

**Established:** 1994 (Started as Pune Institute of Neurology)

- **Headquarters:** Pune, Maharashtra
- **Specialty Origin:** Neurology & Neurosurgery
- **Network Size:**
  - **11 Hospitals** across **Pune, Nashik, Karad**
  - **50+ Lab Collection Centres**
- **Capacity & Workforce:**
  - **1200+ Bed Capacity**
  - **2000+ Clinicians**
  - **4000+ Expert Staff**
- **Experience:** Over **30 years** in healthcare excellence
- **Reputation:** Largest hospital chain in **Western India**

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## Leadership

- **Chairman & Managing Director**: Dr. Charudatt Apte, a renowned neurosurgeon, is the founder and visionary behind Sahyadri Hospitals.
- **CEO**: Mr. Abrarali Dalal leads the organization, overseeing its operations and strategic direction

## Facilities & Services

- **Hospitals**: 11 hospitals across Maharashtra, including locations in Pune, Nashik, Karad, and Ahilya Nagar.
- **Bed Capacity**: Over 1,300 beds across the network.
- **Clinicians**: More than 2,000 medical professionals.
- **Specialties**: Comprehensive range including cardiology, neurology, oncology, orthopaedics, IVF, urology, endocrinology, gastroenterology, and more.
- **Accreditations**: ISO 9001 certified and NABH accredited hospitals.

## Reach & Impact

- **Patient Reach**: Over 7.5 million patients served.
- **International Presence**: Patients from regions like the Middle East, Africa, and other international locations.

### MISSION

- To make quality healthcare **available, accessible, and accountable**, ensuring patient care par excellence.
- Strives to provide timely and high-quality education, review, and monitoring of human research studies, safeguarding and promoting the health and welfare of human research subjects.

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## VISION

- To become an internationally acclaimed specialty medical institute, recognized for excellence in healthcare services.
- Envisions significant growth and expansion, enhancing healthcare access and quality for communities.

## CORE VALUES

- **Quality**: Commitment to delivering the highest standard of medical care.
- **Accessibility**: Ensuring healthcare services are reachable for all.
- **Accountability**: Taking responsibility for patient outcomes and organizational performance.
- **Innovation**: Embracing advancements in medical technology and practices.
- **Compassion**: Providing care with empathy and understanding.

## SERVICES OFFERED

| Service Category | Details |
|---|---|
| **Emergency and Trauma Care** | 24/7 emergency services, Trauma care, Critical care units |
| **Surgical Services** | General surgery, Minimally invasive surgery, Bariatric surgery, Robotic surgery |
| **Cardiology and Cardiothoracic Surgery** | Heart check-ups, Angioplasty, Bypass surgery, Cardiac rehabilitation |
| **Neurology and Neurosurgery** | Brain and spinal cord treatments, Stroke management, Neurosurgical interventions |
| **Orthopaedics and Joint** | Fracture management, Knee/hip/shoulder replacement |

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| | |
|---|---|
| **Replacement** | surgeries, Spine surgery |
| **Oncology** | Cancer diagnosis and treatments, Chemotherapy, Radiation therapy, Surgical oncology |
| **Gastroenterology and Hepatology** | Digestive system disorders, Liver disease treatments, Endoscopy, Colonoscopy |
| **Obstetrics and Gynaecology** | Pregnancy care, Infertility treatments, Laparoscopic gynaecological surgeries |
| **Paediatrics and Neonatology** | Child care, Neonatal intensive care, Paediatric surgery |
| **Dialysis and Kidney Care** | Renal services, Hemodialysis, Peritoneal dialysis |
| **Dermatology and Cosmetology** | Skin treatments, Cosmetic dermatology, Hair transplant |
| **Physiotherapy and Rehabilitation** | Post-surgical rehabilitation, Pain management, Speech therapy |
| **Radiology and Imaging** | X-rays, CT scans, MRIs, Ultrasound, 3D imaging, Diagnostic radiology |
| **Laboratory and Diagnostic Services** | Blood tests, Microbiology, Pathology, Advanced diagnostic testing |
| **Health Check-up Packages** | Preventive health screenings, Executive check-ups |

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# "STRENGTHENING OPERATIONAL PROCESSES TO ENHANCE FINANCIAL OUTCOMES AT SAHYADRI HOSPITALS"

## 1.1 Background

Healthcare organizations depend on efficient RCM to maintain financial stability. However, operational inefficiencies often result in revenue leakage, reducing profitability. Sahyadri Hospitals, a leading healthcare provider, faces similar challenges that require systematic evaluation to mitigate losses and enhance financial outcomes.

In simple terms RCM is the financial procedure that covers all phases from patient registration to final payment and is used by healthcare providers to control and maximize the flow of income from patient care.
Its increasingly recognized as critical component in managing Healthcare finances by better by collecting and analysing revenue data to manage the finances better .

Talking about the significance, as hospital system that oversees billable events during a single healthcare process and produces income as a consequence is called revenue cycle management, or RCM. Thus, from making an appointment, determining coverage eligibility, providing care, and collecting the final payment, RCM monitors and oversees patient billing..

Healthcare providers oversee client billing and revenue using revenue cycle management, or RCM. Data from various systems is analysed by the revenue cycle and consolidated into a single RCM system that is linked to payers. [1]

## SIGNIFICANCE OF REVENUE CYCLE MANAGEMENT:

Revenue cycle management is integral to healthcare institutions' efficient financial operation. It assures correct coding and invoicing, which improves cash flow, reduces claim denials, and speeds up payments. RCM contributes to lowering processing costs while maintaining regulatory compliance by lowering administrative workload and eliminating fraud. Above all, it makes billing clear and error-free, which improves patient satisfaction. By balancing

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operational efficiency and quality service, a well-managed RCM system enables hospitals to concentrate more on patient care and less on financial concerns.


**Figure 1.2:** Significance of RCM

## What are the four principles of revenue cycle management?

The four pillars of revenue cycle management are:

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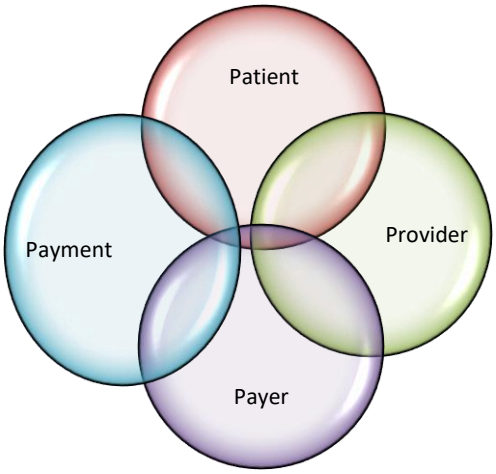


1. **Patient**: Processes include registration, insurance verification, and eligibility checks.
2. **Provider**: Responsible for appropriately documenting and coding all services delivered, including charge capture.
3. **Payer**: Submit claims to insurance companies or other third-party payers for reimbursement.
4. **Payment**: The process of posting payments, reconciling accounts, and managing patient billing and collections.

**COMPONENTS:**

A number of crucial elements make up the hospital's Revenue Cycle Management (RCM) process, which ensures correct billing as well as smooth revenue flow. These include insurance verification and patient registration, which involve gathering personal information and verifying eligibility for insurance. Medical coding and charge collection come next, insuring that all services are accurately coded and documented. While rejection management focuses on handling denied or underpaid claims, the claims submission stage is sending these claims to insurance companies. Financial reporting and analysis aid in monitoring revenue performance and important indicators, while patient billing and collections manage payment processing and financial aid. All of these elements work together to keep a healthcare center financially stable.[2]

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**Table 1.2 :Components of RCM**

| Phase | Step | Activity |
|---|---|---|
| **1. Pre-Visit Phase** | Appointment Scheduling | Patient books via phone, online portal, or walk-in |
| | Insurance Verification | Verify insurance coverage, eligibility, co-pay, and deductible |
| | Pre-Authorization | Obtain necessary approvals for specific procedures or tests |
| **2. Point of Service** | Patient Registration | Collect patient demographics, insurance info, and signed consents |
| | Financial Counseling | Inform patient of estimated costs, coverage, and payment options |
| | Service Delivery | Medical services delivered (consultation, diagnostics, treatment, surgery) |
| **3. Post-Service Phase** | Medical Coding | Convert clinical documentation into ICD, CPT, HCPCS codes |
| | Charge Capture & Billing | Compile charges from services rendered; generate itemized bill |
| | Claims Submission | Submit electronic/paper claims to respective payers |
| | Claim Management | Monitor claim status, correct errors, resubmit denials |
| **4. Payment Collection** | Payer Reimbursement | Insurance reimburses provider based on coverage terms |
| | Patient Responsibility | Collect co-pays, deductibles, and remaining out-of-pocket payments |
| **5. Follow-Up** | Denial Management | Review denials, initiate appeals, resubmit corrected claims |
| | Patient Communication | Clarify billing doubts, send reminders, handle payment plans |
| | Compliance & Reporting | Ensure adherence to legal standards, perform audits, generate reports |

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**CHALLENGES OF RCM :**

**1.Data Consistency:** Keeping data accurate and consistent across many platforms can be difficult. To ensure that data remains accurate, it should be validated and audited on a regular basis.

**2. Integration issues**: Healthcare providers utilise a variety of software systems, which are not always easy to integrate. Invest in integration solutions or discuss the need for a more uniform RCM platform.

**3. Lack of resources** to develop elaborate systems capable of tracking many KPIs. Focus on the most essential KPIs first, then add more gradually as resources allow.

**4.Changing rules**: Healthcare rules change quickly.vKeeping up with them requires updating

KPI definitions and benchmarks as well. If necessary, adjust the KPIs and targets.
Keep track of regulatory developments and alter your practices accordingly.

**5.Balancing Priorities**: Financial KPIs should be balanced against measurements of care qua lity and patient happiness.

**6. Employees may be resistant** to changes in processes or enhanced performance scrutiny. Communicate and educate about how to increase RCM performance.

**7.Data Overload**: When you are presented with so many metrics and key performance indica tors, it can be overwhelming. [3]


**Figure 1.3: RCM Challenges**

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Figure illustrates the various significant obstacles that RCM adoption must overcome. Confusion and departmental goals that are not coordinated can result from an unclear vision. Efficiency is hampered by a variety of operational challenges, including outdated systems and fragmented workflows. Effectiveness is limited and adoption is slowed down by staff opposition to new procedures or technologies.

A 12% denial rate is fairly standard on average. Employees get slowed down by this double effort, which also slows down the processing of ongoing work and raises accounts receivable. [4]

Missed duties and unclear positions are the results of a lack of responsibility. If not carefully thought out, process redesign can be difficult and disruptive. Lastly, as inadequate coordination or supervision can cause RCM endeavors to fail, project management is crucial. For revenue cycle transformation to be successful, these issues must be resolved . [5]

**Common Sources of Revenue Leakage**

- Inefficiencies in patient registration and documentation.
- Billing errors and unbilled services.
- Delayed insurance claims processing and high denial rates.
- Prolonged discharge procedures contributing to financial losses

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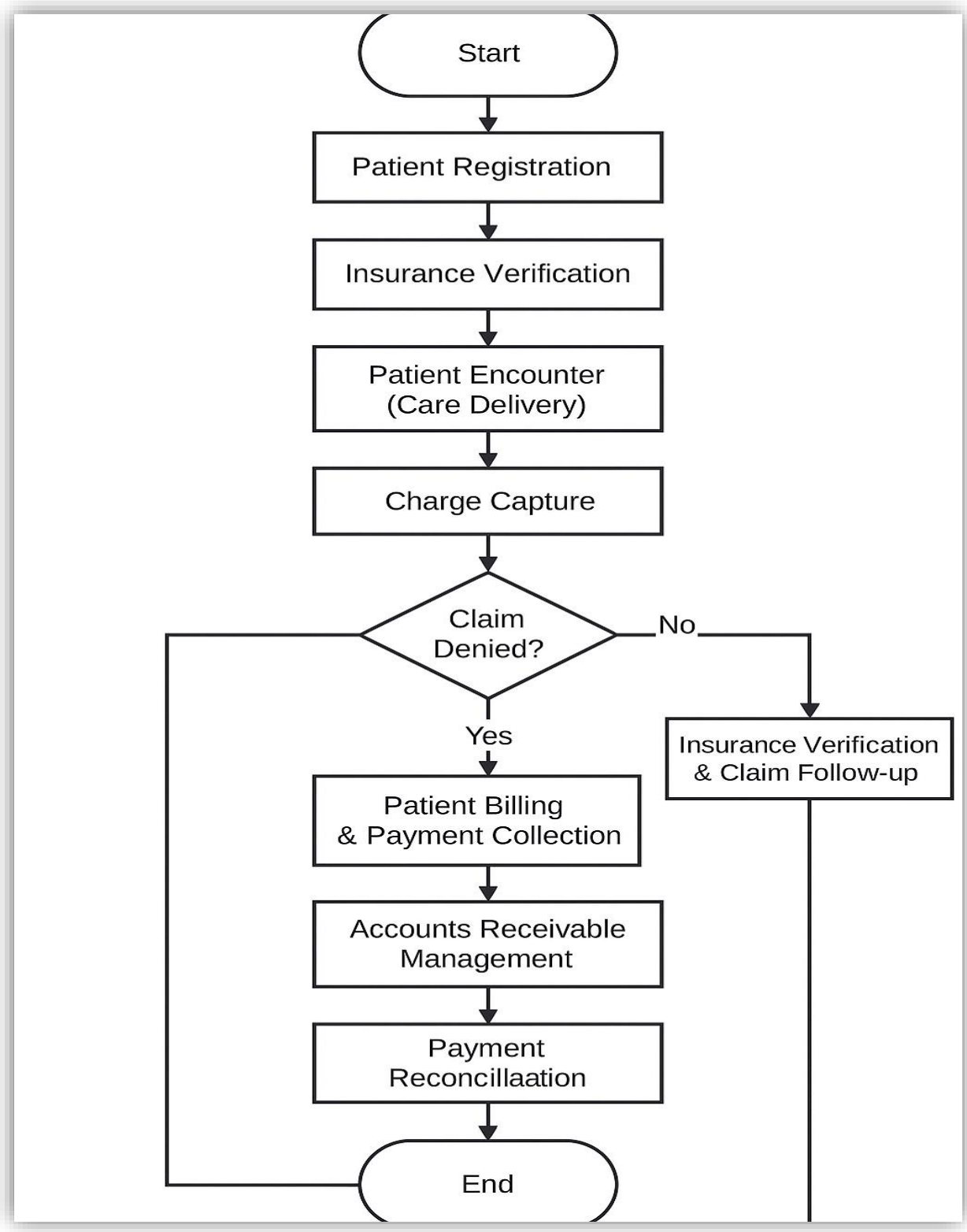
**PROCESS FLOW**

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**AIM**

To identify and analyse operational gaps contributing to revenue leakage in high-revenue departments, with a focus on daily operational inefficiencies that cumulatively result in significant financial losses. The study aims to establish a direct connection between operational workflows and revenue generation, highlighting the long-term consequences of untracked process failures.

**RESEARCH GAP**

Although revenue cycle inefficiencies are commonly recognised, research frequently lacks an overall perspective and concentrates on indirect problems like billing errors or EHR flaws. Empirical evidence regarding the role that certain process delays and inadequate interdepartmental coordination play in revenue leakage is limited. Furthermore, not enough research has been done on the application of real-time data to proactive intervention. Private hospitals in resource-constrained Indian settings are not well-represented in the majority of studies, which are based in rich nations. By conducting a thorough, context-specific analysis of Sahyadri Hospitals' operational inefficiencies, our study fills in these gaps.

**RATIONALE**

Hospital sustainability depends on effective revenue management, particularly in a setting that is competitive and resource-sensitive. In addition to reducing revenue, ongoing inefficiencies in administrative procedures can have an impact on service quality and patient trust. In order to identify operational blind spots in Sahyadri Hospitals, measure their financial impact, and suggest workable solutions to stop revenue leakage and improve system performance overall, this study is required.

**PROBLEM STATEMENT**

What are the key operational inefficiencies in the revenue cycle at Sahyadri Hospital, and how do they contribute to revenue leakage?

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## RESEARCH OBJECTIVES

1. To identify operational gaps in billing, discharge, and insurance departments.
2. To assess the impact of these inefficiencies on claim denials and financial performance.
3. To evaluate key performance indicators such as billing turnaround time and Days Sales Outstanding (DSO).
4. To suggest process-level interventions to improve RCM outcomes.

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## Chapter 3: REVIEW OF LITERATURE

**Table 3.1 : Review of Key Studies Related to Revenue Cycle Management (RCM) :**

| S.No. | Authors (Year) | Study Location | Sample Size & Technique | Salient Features | Methodology | Detailed Proposed Solutions |
|---|---|---|---|---|---|---|
| 1 | Mathur D (2023) | India | 12 healthcare marketing heads (Purposive Sampling) | Poor media planning delays billing and impacts claims. | Descriptive Study | Automate billing and claim update systems; adopt targeted digital marketing to enhance patient acquisition and revenue flow. |
| 2 | Alradhi Z, Alanazi A (2023) | Saudi Arabia | 18 RCM executives (Semi-structured Interviews) | Fragmented systems, lack of accountability, partial RCM implementation. | Qualitative Analysis | Implement centralized governance; create integrated SOPs; train staff; enhance audits and stakeholder engagement. |
| 3 | Singh MP et al. (2010) | USA | 94 hospitals (Secondary Data) | Payer mix influenced revenue; collection period improved significantly. | Regression Analysis | Monitor and optimize payer mix; increase Medicare admissions; implement aggressive follow-up on delayed claims. |
| 4 | Ahadinezhad B et al. (2022) | Iran | Meta-analysis of hospital data | 5% bill deductions; 45% records had errors due to | Systematic Review | Regular staff training in documentation and coding; introduce |

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| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | documentation/coding issues. | | clinical checklists; improve coding supervision and audits. |
| 5 | IBEF & CRISIL Report (2018) | India | Not Applicable (Market Analysis) | 74% of hospitals private; family-run with high costs; inefficiencies prevalent. | Market Analysis | Introduce digital billing systems; standardize governance structures; reduce manual processes; support growth of corporate models. |
| 6 | Praveen Kumar et al. (2020), Mony PK (2007) | India | National Review (Literature Review) | Lack of ICD-10 trained coders; coding errors impact financials and planning. | Policy and HIS Review | National ICD-10 training; EMR integration; uniform coding standards; regular coding quality audits. |
| 7 | Industry Reports (Various) | Global | Not Applicable | Insurance success linked to simple products, claims management, fraud prevention. | Literature Review | Simplify insurance design; improve provider-insurer contracts; use fraud detection tools; streamline preauthorization and claims. |

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# CHAPTER 4: METHODOLOGY

**Sample Size:** 282

**Setting**: Kothrud Branch of Sahyadri Hospital

**Sampling Technique:** Observative Study and secondary data

**Study Design:** Mixed methods (Qualitative and Quantitative)

**Data Collection:** Billing, Discharge, Insurance claims audit reports, Financial metrics

**Study Duration:** 3 Months

**Tools:** Excel, Interview guides

**Study Duration:** 3 months (March to May)

## STRENGTHS AND LIMITATIONS:

**Strengths**:

1) 2 Adequate sample size (282).

Sufficient to reach relevant conclusions in hospital-based operational research.

**2) Clear setting**.

Focussing on a single branch (Kothrud, Sahyadri Hospital) ensures consistency in data sources and processes.

3**) Mixed Methods Design**

Combining quantitative data (financial measures) and qualitative insights (interviews) provides a comprehensive knowledge.

**4) Use of Real-Time Data Sources**

Billing, discharge, and insurance claim audit reports improve reliability and authenticity.

**5) Defined Study Period (March-May - 3 months**)

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Allows for targeted data analysis within a given time frame to investigate patterns and trends.

**6) Use of Tools (Excel and Interview Guides)**

Practical tools for data processing and thematic analysis improve validity.

**LIMITATIONS**

1) **A single-centre study.**

Limits generalisability to other branches or hospitals that use different billing/insurance methods.

**2) Exclusion of OPD Patients**

It is possible to overlook important denial trends and financial implications related with outpatient care.

3) **Short Study Duration**

Three months may not cover seasonal or policy-driven swings in claims or denials.

**4) Secondary Data Reliance**

There is a possibility that data will be missing or biassed due to recording errors or technological constraints.

**5) Potential Observer Bias**.

Observative research may involve subjectivity in data interpretation.

`

**6) Lack of a control group or baseline comparison**

There may be less analytical depth if no control group or prior benchmark is used.

**OPERATIONAL DEFINITIONS:**

- **Billing Inefficiency**: The failure to generate or submit accurate and timely bills due to manual processes, missing codes, or fragmented information flow between clinical and billing departments. Insurance

- **Claim Processing Inefficiency**: Involves delays or denials in claim submission caused by incomplete documentation, lack of eligibility verification, or mismatched coding, impacting hospital reimbursements.
- **Documentation Gaps**: Missing, illegible, or incomplete clinical records that result in claim rejections or deductions, contributing to revenue loss.

- **Discharge Delay Impact**: Prolonged discharge times due to non-aligned workflows between medical, nursing, billing, and pharmacy teams, directly affecting bed turnover and billing closure.

- **Revenue Leakage:** The cumulative financial loss arising from unnoticed or unresolved inefficiencies within the RCM processes, such as missed charges, underbilling, or rejected claims.

- **Claims denial** occurs when a health insurance company refuses to honor a request to pay for healthcare services or products provided to a patient

- **Outstanding Amount** :Any balance that is unpaid or due from a customer (patient or insurance provider) for services rendered

- **Days Sales Outstanding (DSO**) : Its is a financial metric that indicates the average number of days it takes a company to collect payment after a sale has been made.

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# CHAPTER-5
# DATA ANALYSIS

## BILLING DEPARTMENT

An essential component of a hospital's Revenue Cycle Management (RCM) system is the billing department. It is in charge of creating precise bills for the services provided, confirming patient information, using the appropriate codes, and making sure that claims are sent to insurance companies on time. The billing department has a direct impact on the hospital's revenue flow since it is a crucial link between clinical care and financial reimbursement. Denials of claims and large revenue losses might result from inefficiencies such data entry mistakes, delayed billing, or code incompatibilities. Therefore, hospital operational efficiency and financial sustainability depend on a functioning billing unit.

**Analysis:**

**Table 5.1**: Billing audit Format (Feb 25 -march 25)

| Date | Sr No | PRN | Name of Patient | Observation | Corrective Action Planned | Impact (₹) Positive | Impact (₹) Negative | Remark | Responsibility Assigned |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |

Above billing audit depicts no marked inefficiency found in Monthly billing Audit possibly due to Digital Billing mode by software "**SHIVAM**" provides null issues over billing, and if there are can also be resolved quickly on the spot.

**BILLING TAT ANALYSIS:**

**Billing Turnaround Time (TAT)** is essentially the time it takes to complete the billing process after a patient has received care or a service has been provided. It's really important in healthcare settings to make sure patients get their bills on time, and insurers are billed efficiently.

Here's a breakdown of what goes into calculating **Billing TAT**:

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1. **Start Time (S):** This is when the billing process begins, typically after a service is delivered or necessary documentation is available.
2. **End Time (E):** This is when the billing process finishes, meaning the invoice is ready or the claim has been submitted.
3. **Total Time (TAT):** The total duration taken from when the billing process starts to when it's completed.
    - **Formula:**

      **TAT**=E−STAT = E - STAT=E−S

4. **Billing Delay (D):** If there's any delay, this measures how much longer it took compared to the expected time.
    - **Formula:**

      D= Actual Time- Expected Time

5. **Expected Time (ET):** This is how long the billing process should ideally take according to standards.

**Average Billing TAT**

TAT= Total time taken for billing/ Number of Bills processed

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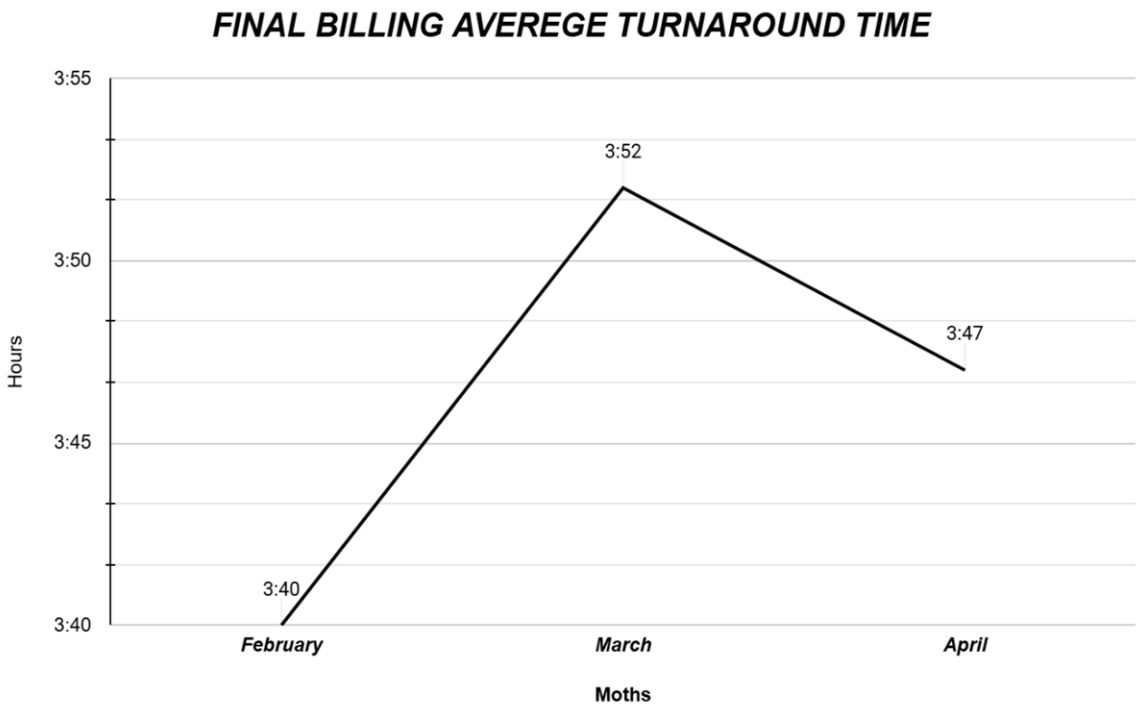


**Figure 5.1: Trend Analysis of TAT of 3 months**

**Interpretation**:

| Month | Average TAT | Interpretation |
|---|---|---|
| **Feb** | 3h 40m 01s | Final bills were prepared ~3 hours 40 minutes after initiation. Indicates moderately fast processing. |
| **Mar** | 3h 52m 06s | Slight increase in average time compared to Feb. Possible workload or staffing issues. |
| **Apr** | 3h 47m 44s | Slight improvement over March, but still higher than February Suggests inconsistency. |

**NABH STANDARDAZATION:**

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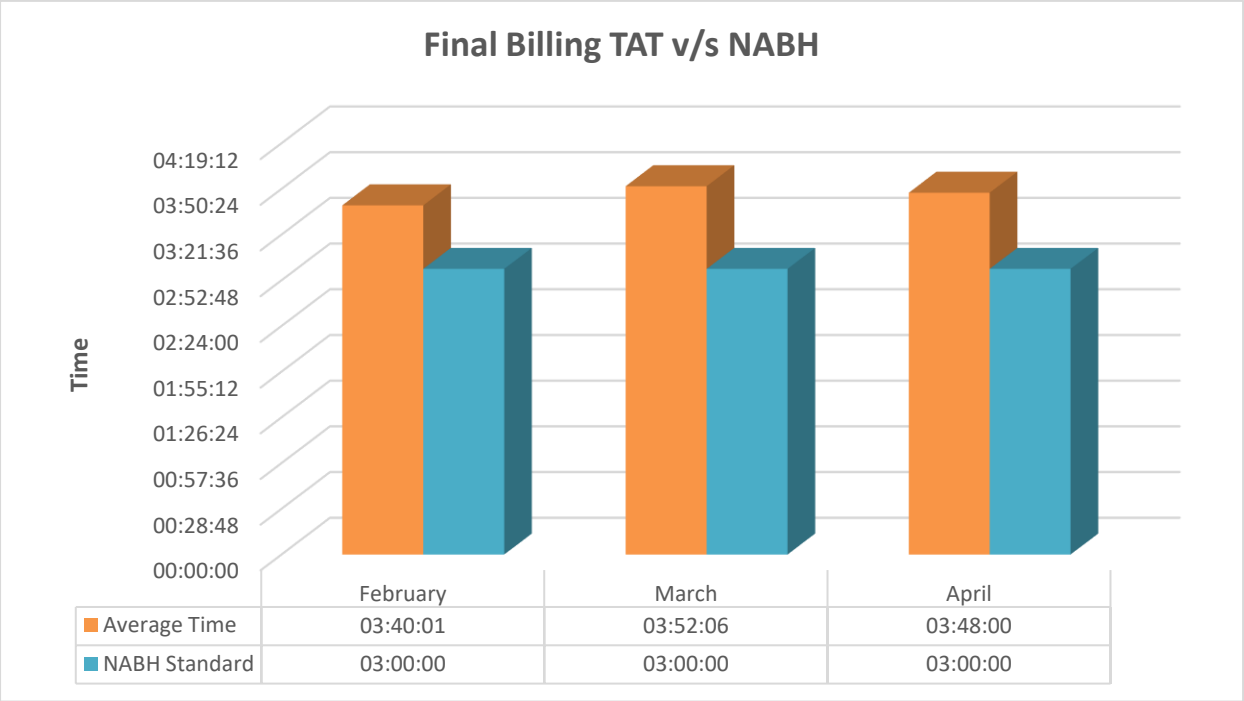


**Figure 5.2 Final Billing TAT v/s NABH**

Above figure depicts that in February billing TAT exceeded the NABH limit by 40 min , similarly for March by 52 min which is more than previous month and April by 48 minutes signifies some kind of process operational inefficiency  in billing process.

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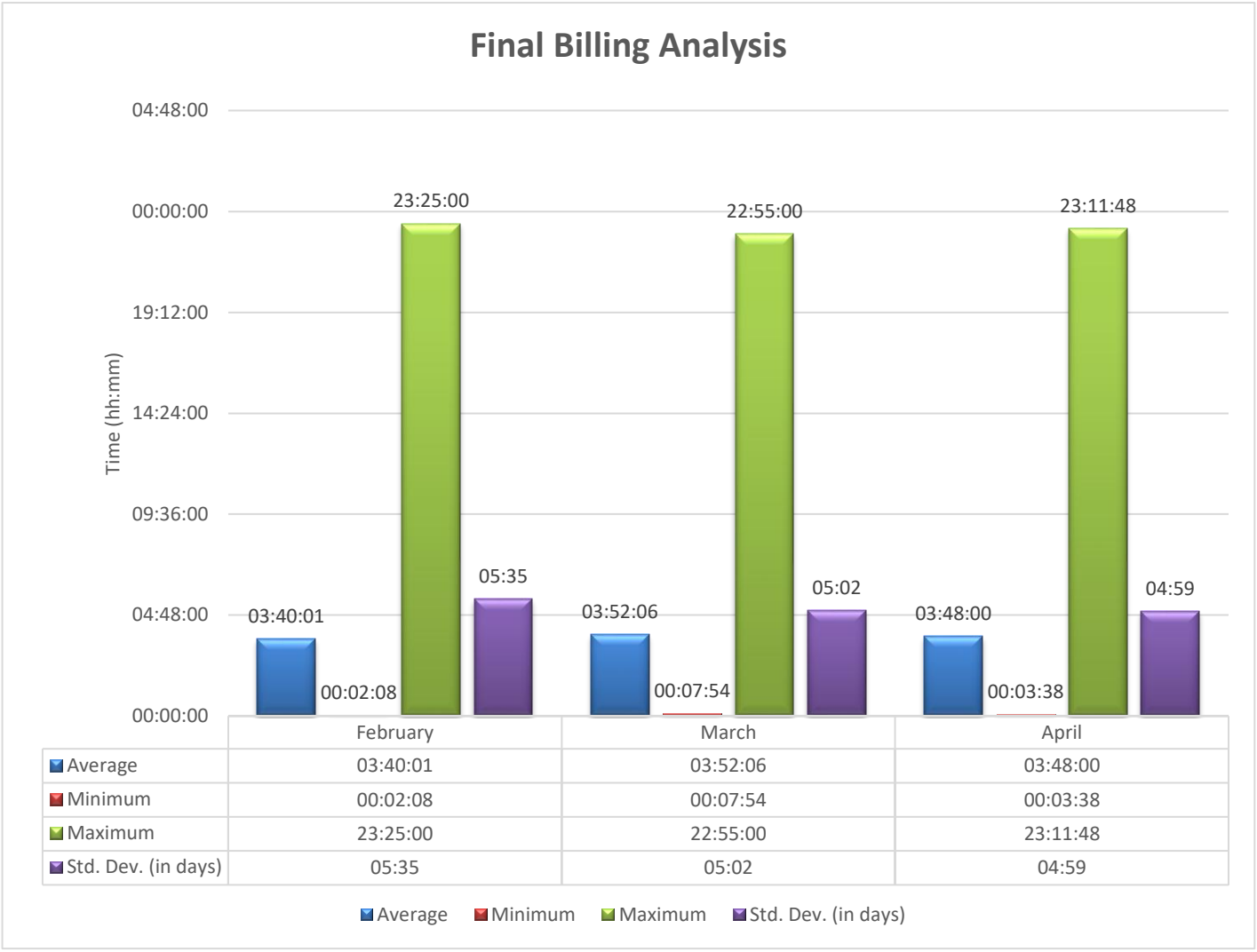


**Figure 5.3**: **Descriptive Billing Analysis**

Figure depicts that Average is consistent across the months, around 3 hours 45 minutes, which is **above** the standard NABH ideal of 2 hours.

In **minimum** best case billing, under 10 indicates a highly efficient manner or short cases.

**Maximum** shoes highest time of nearly 24 hours, possibly due to Insurance issues, documentation delays or weekend discharges.

**Standard Deviation** shows High variation in billing times, indicating inconsistency in the discharge process

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## INSURANCE DEPARTMENT

Revenue Cycle Management (RCM) relies heavily on the Insurance Department, which manages insurance verification, timely claim submission, and reimbursement follow-ups. Serving as a liaison between the hospital and insurance companies, the team makes ensuring that pre-authorizations, policy checks, and appropriate documentation are in place to minimise claim delays and denials. Effective operation enhances financial success and patient happiness while sustaining consistent cash flow.

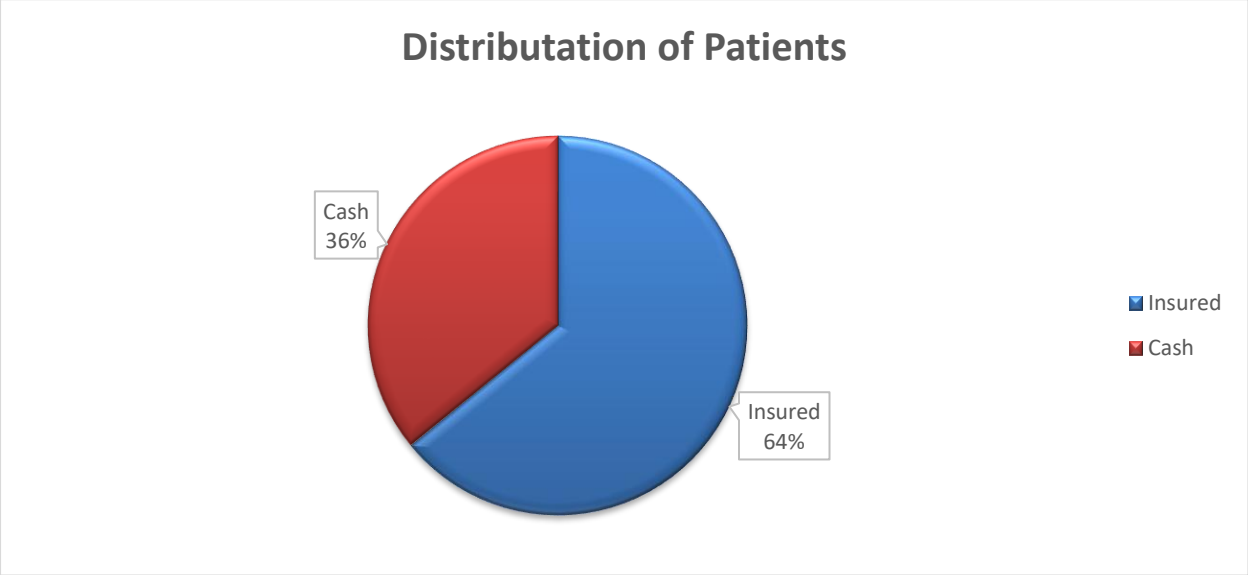


**Figure 5.4 Patient Distribution**

Above Figure Stats that 36% of patients are of Cash and the majority of patients are of Insured ones, i.e. 64%, thus hospital RCM is dependent on Insured patients only.

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**CLAIM SETTLEMENT:**

**Claim settlement** is a crucial component of the health insurance and hospital revenue cycle management. It refers to the process through which an insured patient or hospital is reimbursed or paid for medical services availed under a valid insurance policy. Efficient claim settlement not only ensures timely cash flow for hospitals but also builds trust among patients and insurers. Delays or denials in this process often lead to dissatisfaction, administrative burden, and financial strain.

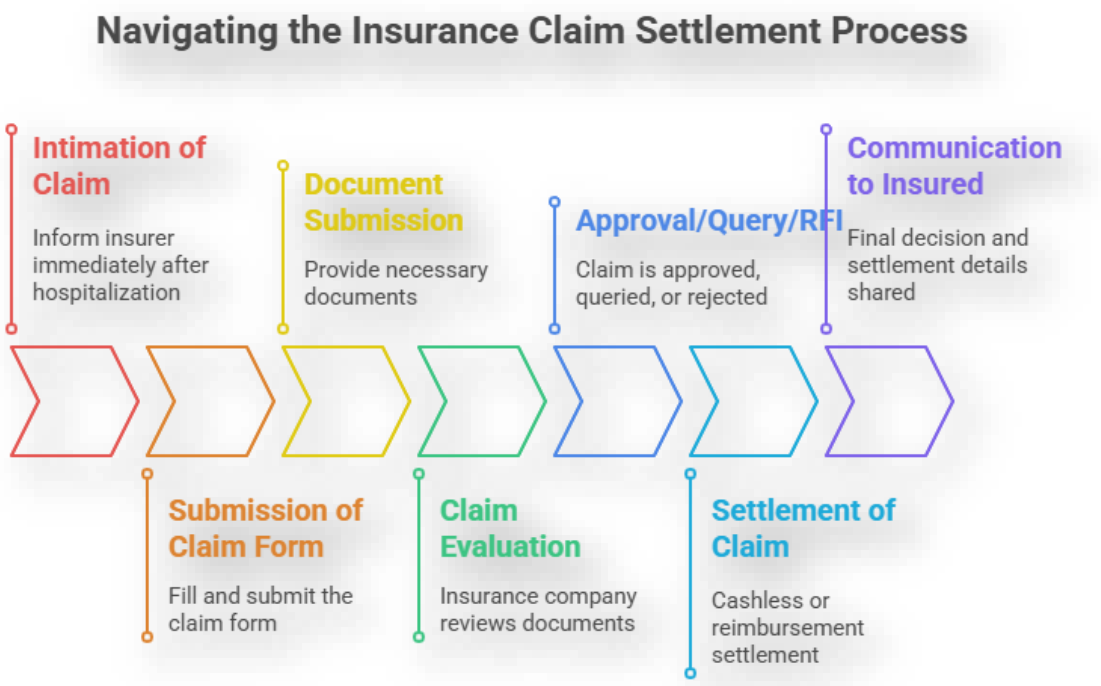


**Figure 5.5 Claim settlement Process**

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1) **Intimation of Claim**

- Inform the insurer (via call/email/portal) immediately after hospitalization or planned treatment.

2) **Submission of Claim Form**

- Fill and submit the claim form (either cashless or reimbursement).

3) **Document Submission**

- Provide necessary documents like:
  - Hospital bills
  - Discharge summary
  - Prescriptions
  - Investigation reports
  - ID proof
  - Policy details

4) **Claim Evaluation**

- Insurance company reviews documents and verifies eligibility under the policy.

5) **Approval/Query/RFI**

Claim is:

  - **Approved** – Partial/full amount sanctioned.
  - **Queried** – More information or clarification required.
  - **Rejected** – If not eligible as per policy terms.

6) **Settlement of Claim**

- For **cashless**: Amount paid directly to hospital.
- For **reimbursement**: Amount credited to policyholder's bank account.

7) **Communication to Insured**

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Final decision and settlement details are shared with the insured.

**SIGNIFICANCE:**

1. **Ensures Timely Revenue for Hospitals:**
   Prompt and accurate settlement of insurance claims secures steady cash flow, enabling hospitals to maintain operations, pay staff, invest in infrastructure, and procure necessary medical supplies.
2. **Enhances Patient Satisfaction:**
   Quick processing of claims reduces out-of-pocket expenses and financial stress for patients, thereby improving their trust and satisfaction with the healthcare provider.
3. **Reduces Administrative Burden:**
   Streamlined claim processes minimize repetitive follow-ups, reduce errors, and free up administrative resources, allowing staff to focus more on patient care and other critical tasks.
4. **Improves Compliance and Transparency:**
   Proper claim settlement ensures adherence to insurance policies and regulatory requirements, reducing the risk of audits, penalties, or legal complications.
5. **Supports Data-Driven Decision Making:**
   Effective claims management generates valuable data that can be analyzed to identify operational bottlenecks, optimize workflows, and improve hospital management strategies.
6. **Promotes Sustainable Healthcare Financing:**
   By facilitating smooth transactions between insurers, providers, and patients, claim settlement plays a crucial role in sustaining the health insurance ecosystem, which in turn supports wider healthcare access.
7. **Minimizes Revenue Leakage:**
   Accurate claim handling reduces losses due to rejected or delayed claims, helping hospitals maximize their entitled reimbursements.

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## CLAIM SETTLEMENT DELAYS

**Table 5.3 : Common reasons for Delay in processing are**

| Category | Error/Issue |
|---|---|
| Documentation Issues | Incomplete or missing forms (e.g., discharge summary, bills, consent) |
| | Illegible handwriting in reports |
| | Missing doctor's signature or seal |
| | Incorrect or missing ICD/DRG/procedure coding |
| | Incomplete medical records or case sheets |
| Payment Delays | Delay in reimbursement or cashless approval |
| | Discrepancies in approved vs. billed amount |
| | Lack of real-time claim status updates |
| IT Errors | Claim portal downtime |
| | Failed upload of documents |
| | Auto-rejections due to software rules |
| | Duplicate claim entries |
| Policy Issues | Treatment not covered under policy/exclusion clause |
| | Claim raised during waiting period |
| | Pre-authorization not obtained for planned admission |
| | Patient unaware of policy clauses or limits |
| | Invalid or expired policy at time of admission |
| Human Errors | Data entry mistakes (e.g., wrong patient ID, policy no., name mismatch) |
| | Untrained or undertrained insurance desk staff |
| | Miscommunication between billing, MRD, and treating team |
| | No follow-up on insurer/TPA queries |
| Process Gaps | Delay in inter-departmental communication (insurance, billing, MRD) |
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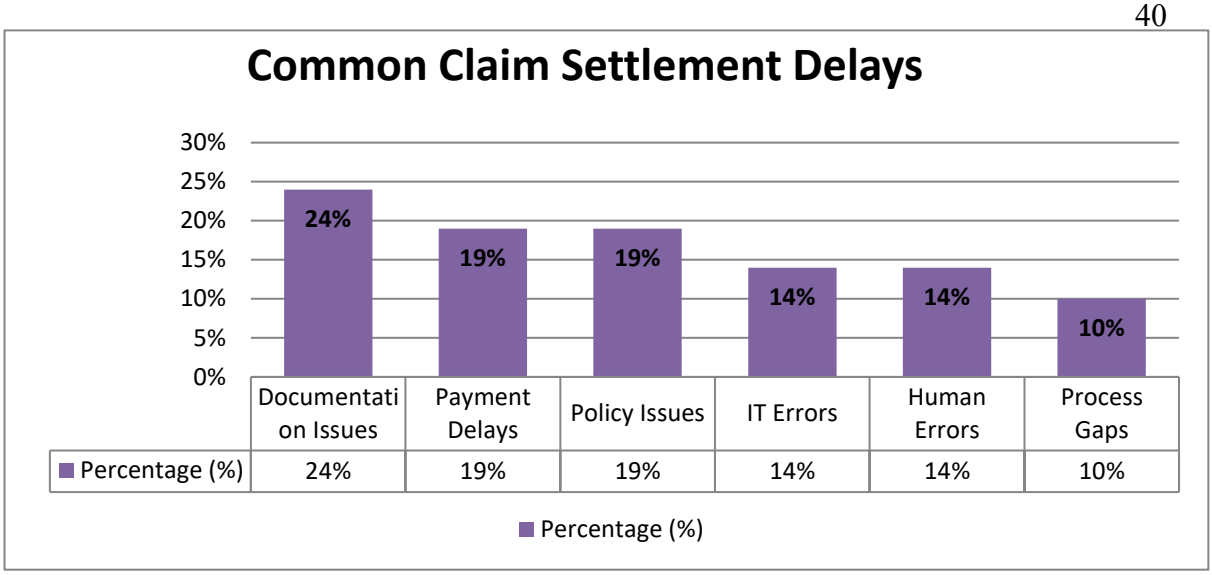


**Figure 5.6 Common reasons for Claim delays**

The chart shows that the leading cause of claim settlement delays is **documentation issues (24%)**, followed by **payment delays** and **policy issues** at **19%** each. **IT errors** and **human errors** contribute **14%**, while **process gaps** account for **10%**. This highlights the need for better documentation, streamlined processes, and improved coordination to ensure faster claim settlements.

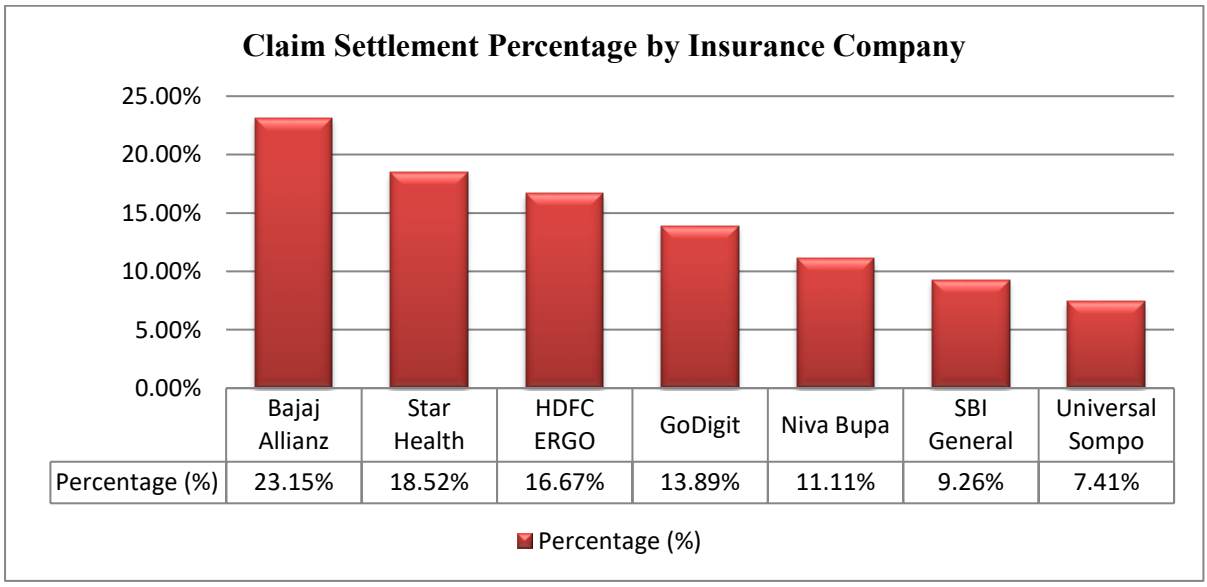


**Figure 5.7 Claim settlement percentages**

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This figure depicts thatBajaj Allianz leads claim settlements with **23.15%**, followed by Star Health (**18.52%**) and HDFC ERGO (**16.67%**), together handling over half of the claims. GoDigit (**13.89%**) and Niva Bupa (**11.11%**) hold moderate shares, while SBI General (**9.26%**) and Universal Sompo (**7.41%**) have smaller portions. This indicates a moderately concentrated claim settlement market dominated by a few key insurers.

**CLAIMS DENIAL**

## Background

**Definition:**

Claim denial refers to the refusal by an insurance company or third-party payer to pay for healthcare services rendered by a provider, despite a submitted request (claim) for reimbursement.

**Purpose of Claims:**

Healthcare providers submit claims to insurers or government programs (e.g., Medicaid, Medicare) after delivering services to patients. These claims contain details of procedures, diagnoses, and associated costs. The aim is to receive payment for covered medical services.

Total Denial Cases in 3 months (February, March and April) = 39

**Table no. 5.4 : Claims Denial Rate**

| Month | Denial Rate | Standard Denial Rate |
|---|---|---|
| February | 34.00% | 10% |
| March | 36.00% | 10% |
| April | 45.00% | 10% |

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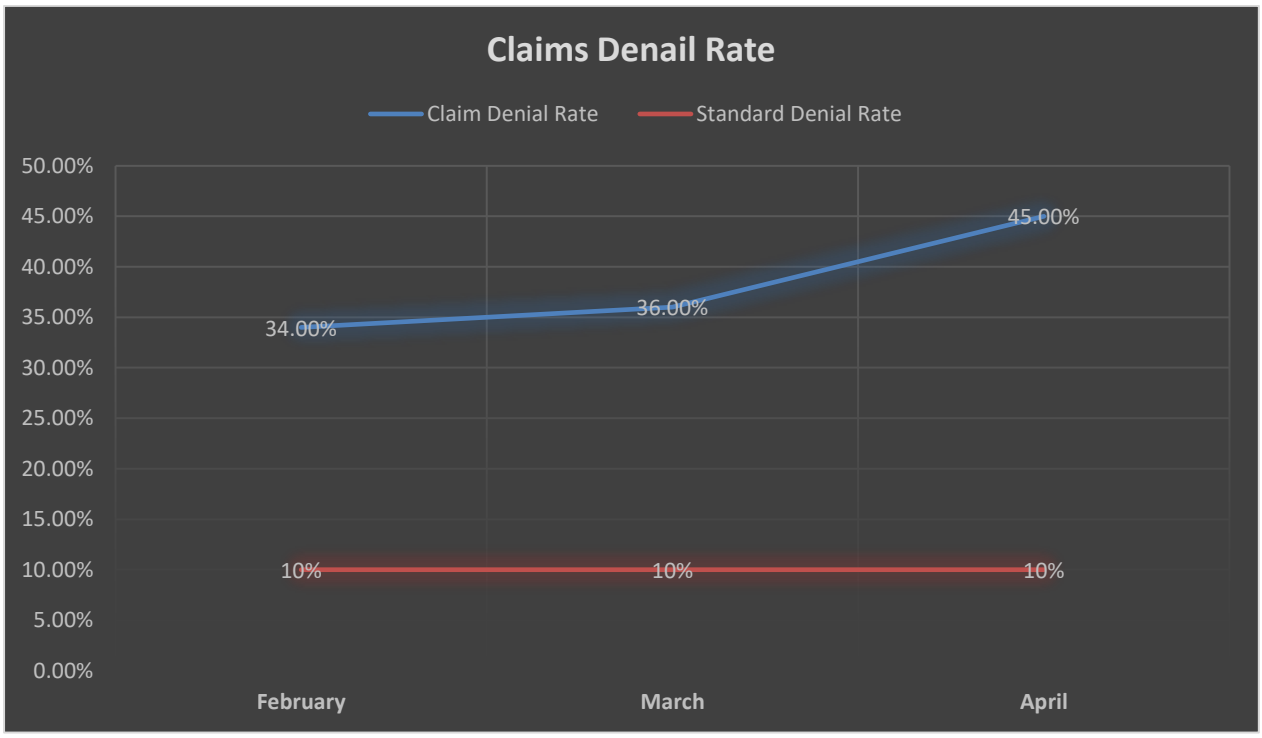


**Figure no 5.7.1: Claims Denial Rate v/s Standard Rate**

With a noticeable upward trend, the denial rates for February (34%), March (36%), and April (45%) are all significantly higher than the typical baseline of 10%. This points to increasing inefficiencies in the claims procedure, which could be brought on by mistakes in insurance verification, coding, or documentation.

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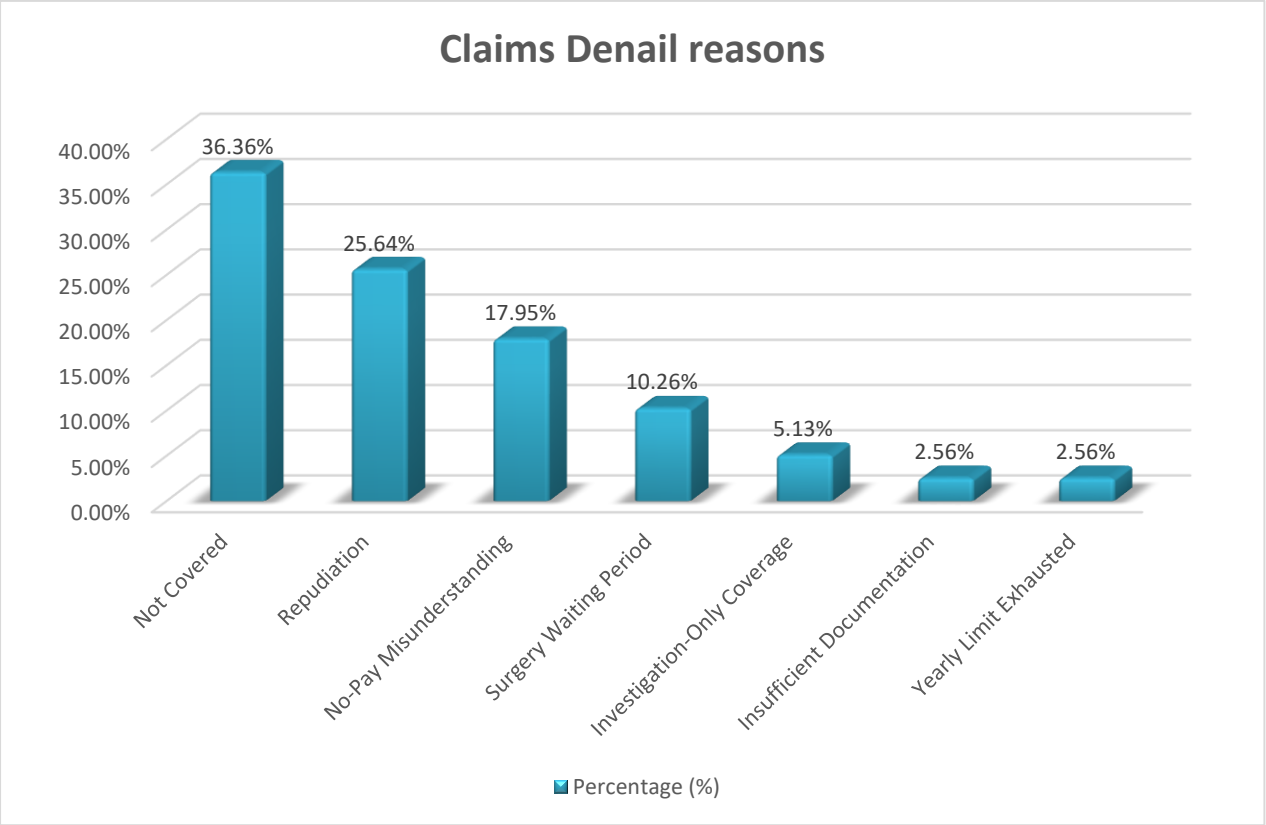


**Figure 5.8: Claims Denial Reasons**

Above Figure shows Common reasons for denial for Claims during Insurance in which top three reasons for claims denials are The key reasons include **Not Covered** (36.36%), **Repudiation** (25.64%), and **No-Pay Misunderstanding** (17.95%). **Surgery Waiting Period** accounted for 10.26%, followed by **Investigation-Only Coverage** (5.13%) and **Insufficient Documentation** (2.56%). **Yearly Limit Exhausted** contributed 2.56%.

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## DISCHARGE

Discharge acts as the **starting point for final billing** and ensures **accurate capture of all services** rendered during the patient's stay.

**Key Responsibilities during Discharge:**

- **Documentation Check:** Verifying that all procedures, diagnostics, and consumables are recorded.
- **Interdepartmental Clearance:**
  - Clinical clearance from treating doctors
  - Pharmacy clearance for pending medications
  - Finance clearance for advance payments
- **Coordinating with Billing Team:** Sharing discharge summary and final documents for bill preparation.

**Impact on Revenue Cycle**

- **Prevents billing delays** by ensuring all data is available for timely invoice generation.
- **Reduces errors** in final bills that can lead to claim rejections or denials.
- **Enhances patient satisfaction** through faster and smoother discharge experiences

## DEPARTMENT WISE TAT ANALYSIS

**Table 5.5**

| Process | Standard (min) | Feb | Mar | Apr |
|---|---|---|---|---|
| **Nursing Clearance** | 60 | 17.62 | 31.88 | 19.3 |
| **Laboratory Clearance** | 60 | 18.6 | 31.55 | 29.61 |
| **Radiology Clearance** | 60 | 16.13 | 25.6 | 28.67 |

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| | | | | |
|---|---|---|---|---|
| **Pharmacy Clearance** | 120 | 15.68 | 29.97 | 30.97 |
| **File Record TAT** | 240 | 38.98 | 75.86 | 31.97 |
| **Final Billing TAT** | 360 | 220 | 232.1 | 267.73 |

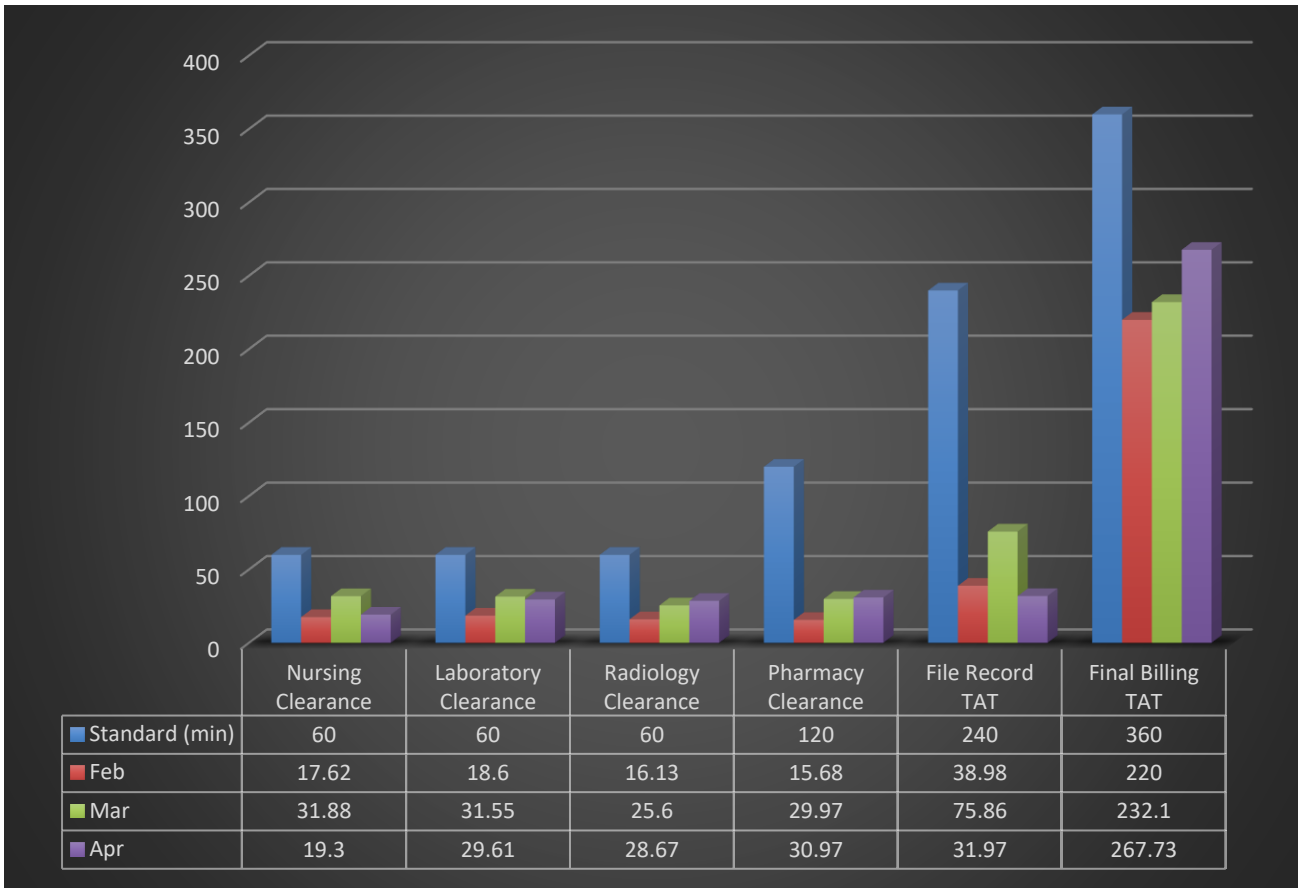


**Figure 5.9: DEPARTMENT WISE TAT ANALYSIS FOR DISCHARGE**

Strong efficiency is shown by the turnaround time (TAT) analysis for discharge procedures from February to April. Clearances in radiology, pharmacy, nursing, and laboratory routinely surpassed their acceptable levels, demonstrating efficient interdepartmental collaboration. For example, for all months, nursing clearance was far below the 60-minute requirement. Pharmacy clearance stayed below the 120-minute standard, indicating efficient workflows, while laboratory and radiology clearances likewise demonstrated prompt report processing. Although rather erratic, the file record TAT was within reasonable bounds. Despite rising from 220 minutes in February to 267.73 minutes in April, final billing remained within the 360-minute norm, suggesting that more optimisation is possible. Patient satisfaction and discharge efficiency may be enhanced by on-going billing monitoring.

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# SCATTER PLOT

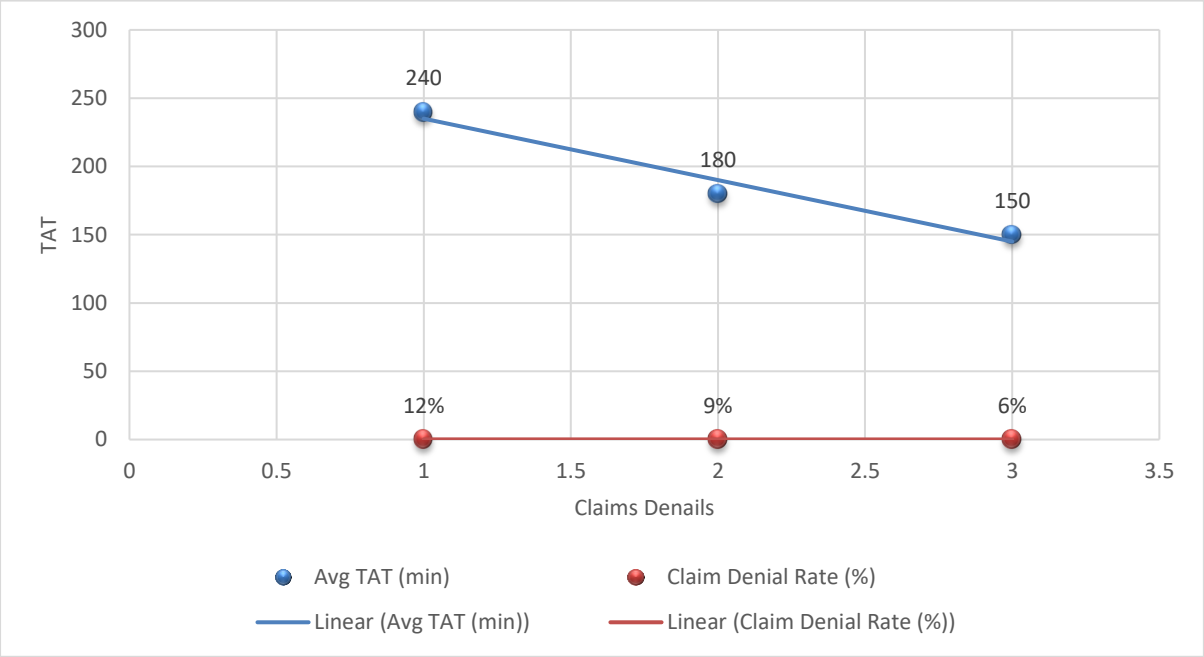


**Figure 5.91 :Scatter Plot between Claims denial and Average TAT**

The scatter plot shows that **reducing the average turnaround time in processing claims is associated with a reduction in the claim denial rate.**
This suggests improving operational efficiency (faster claim processing) may help reduce denials, possibly due to fewer errors, more accurate documentation, or timely submissions.

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# REVENUE LEAKAGE ANALYSIS

## ACCOUNTS RECEIVABLE DAYS

Outstanding Amount is the total amount that a hospital or healthcare institution has yet to receive from various payers after providing medical services. This sum remains in Accounts Receivable (AR) until it is fully paid.

After treatment or discharge, bills are generated and submitted to the payer (e.g., TPA, government plan, corporate, or patient).

Until payment is received, the billed amount is deemed outstanding.

**Outstanding Amount = Total Billed Amount – Amount Received**

Common sources for outstanding amounts:

| Payer Category | Reasons for Outstanding Balances |
|---|---|
| Corporate | Delays in invoice processing and internal approvals |
| Government | Slow reimbursement cycles, bureaucratic delays |
| TPA (Insurance) | Claim processing delays, rejections, and documentation difficulties |
| Patients | Partial payments or post-discharge billing |

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| | |
|---|---|
| Lab Clients | Monthly billing cycles or late payments from external sources |

**Significance**

- A large outstanding balance impacts cash flow and working capital.
- Tracking allows you to discover problematic payers and enhance your collection techniques.
- Can be used in conjunction with DSO to examine the financial health and efficiency of the billing team.


**Figure 5.10: Outstanding Amount**

The graph displays the outstanding dues in various categories for February and March 2025. The Government segment experienced the greatest decline, from ₹498.46 million in February to ₹398.03 million in March, indicating a significant improvement. TPA Group had a huge

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decline from ₹368.61 million to ₹306.83 million. Corporate dues dropped from ₹40.37 million to ₹35.31 million, while patient outstanding decreased significantly from ₹17.23 million to ₹6.65 million. However, dues for Indus and Lab Clients increased from ₹13.22 million to ₹18.43 million and ₹18.09 million to ₹21 million, respectively.

Overall, most categories improved, resulting in a net reduction in total outstanding dues by the end of March 2025.

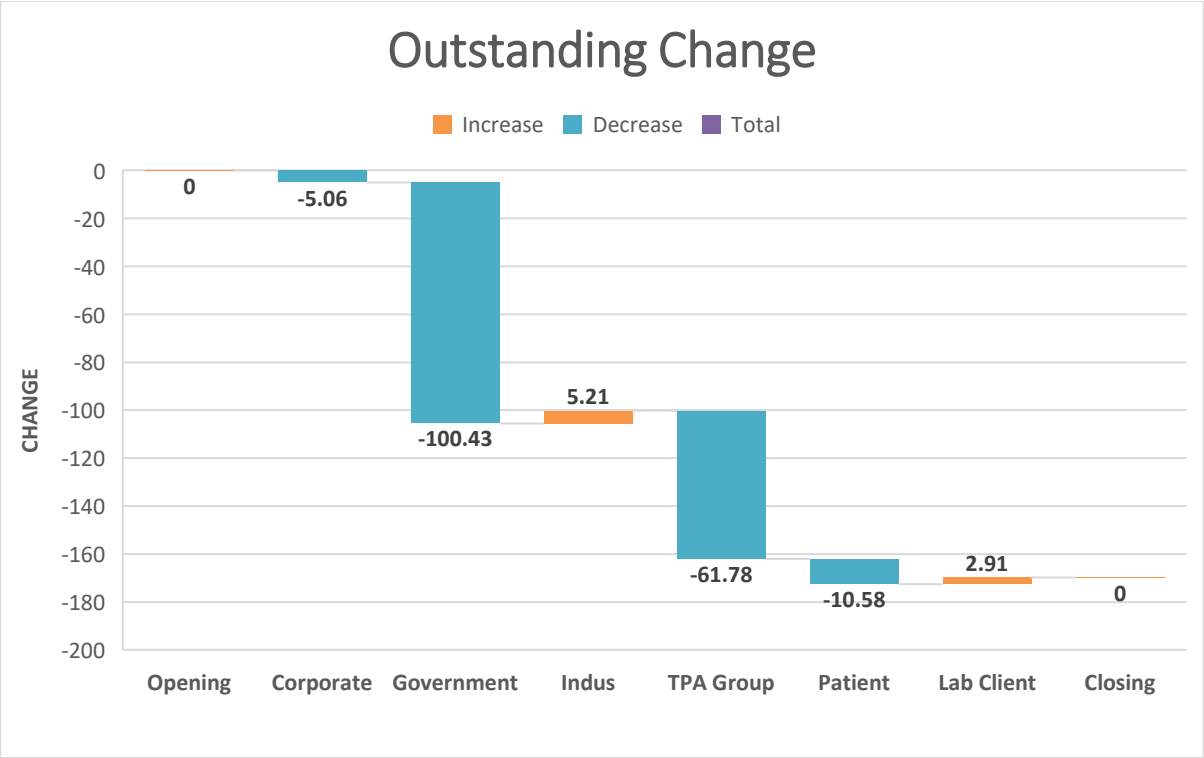


**Figure 5.11 Outstanding Amount Change**

The waterfall chart depicts how the total outstanding amount changed from February to March 2025, divided by category. Beginning with the February total of ₹955.98 million, the chart shows how payments or increased dues from each category affected the total sum. The corporate outstanding declined by ₹5.06 million, followed by a huge reduction of ₹100.43 million from the government, which was the biggest contribution to the dip. TPA Group experienced a significant decrease of ₹61.78 million, while patients paid off ₹10.58 million. Indus and Lab Clients contributed ₹5.21 million and ₹2.91 million, respectively, raising the

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outstanding amount somewhat. Overall, the combined effect of these improvements resulted in a net decrease in total outstanding dues by the end of March 2025.

## Days Sales Outstanding (DSO)

Financial indicator that calculates the average number of days it takes a company to collect payment after a sale. It shows how effectively a company handles its accounts receivable and can be a good predictor of liquidity and cash flow.

The purpose of DSO is to help understand the efficiency of a company's credit and collection processes. A lower DSO usually means that a company is receiving payments fast, which is good for its cash flow. A greater DSO may indicate that the company is having trouble collecting payments, which can cause cash flow issues.

A. **High DSO** may suggest that the company extends too much credit to consumers or has inefficient collecting practices.

B. **Low DSO**: This indicates that the company has effective credit rules and is able to collect payments more quickly, hence enhancing cash flow.

**Industry Standards**: DSO might vary per industry. For example, organisations in manufacturing may have a larger DSO due to lengthier payment cycles, whereas service-based industries may have a lower DSO.

**Significance :**

- DSO plays a critical role in managing cash flow, which is essential for corporate operations and growth.
- **Credit Risk Assessment**: It aids in determining how effectively a company manages credit risk, particularly with reference to client payment behaviour.
- **Operational Efficiency**: By monitoring DSO, organisations may examine the efficacy of their sales and collection teams and alter strategies as needed.

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- DSO is frequently used as a key performance indicator (KPI) to monitor improvements or declines in receivables management.

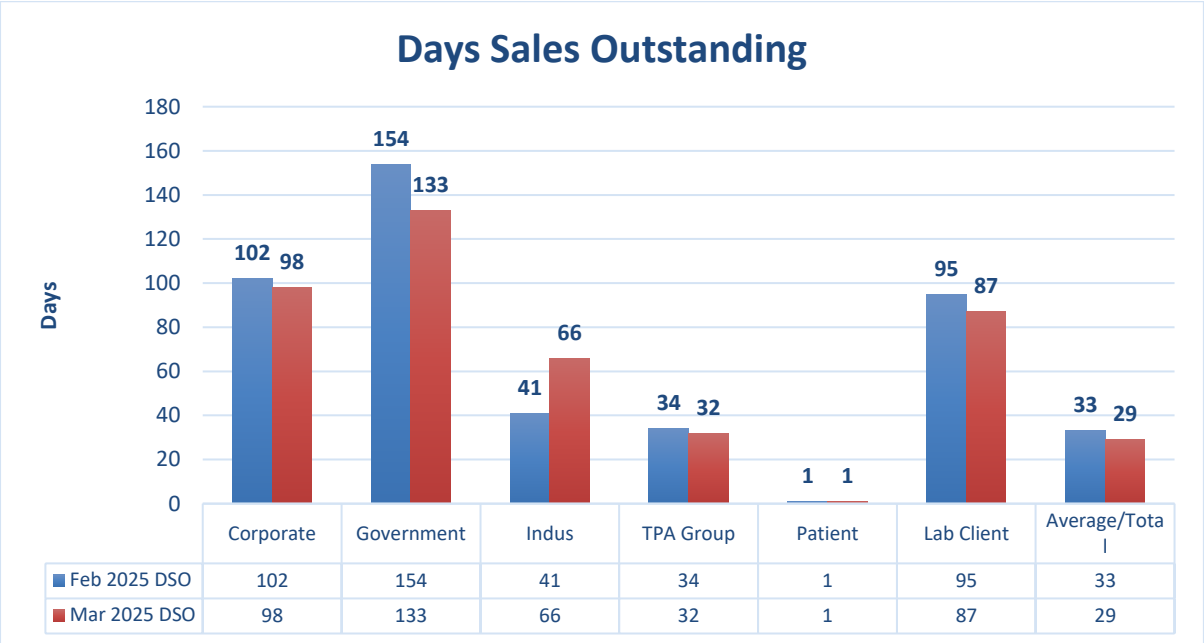


**Figure 5.12: Days Sales Outstanding**

The Days Sales Outstanding (DSO) showed an overall improvement, dropping from 33 days in February 2025 to 29 days in March 2025. Significant improvement was seen in the government segment (154 to 133 days), followed by corporate and lab clients. The TPA group saw a slight improvement, while patient payments remained steady at 1 day. However, the industry segment worsened, with DSO increasing from 41 to 66 days, indicating a need for attention.

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## CHANGE IN DAYS SALES OUTSTANDING

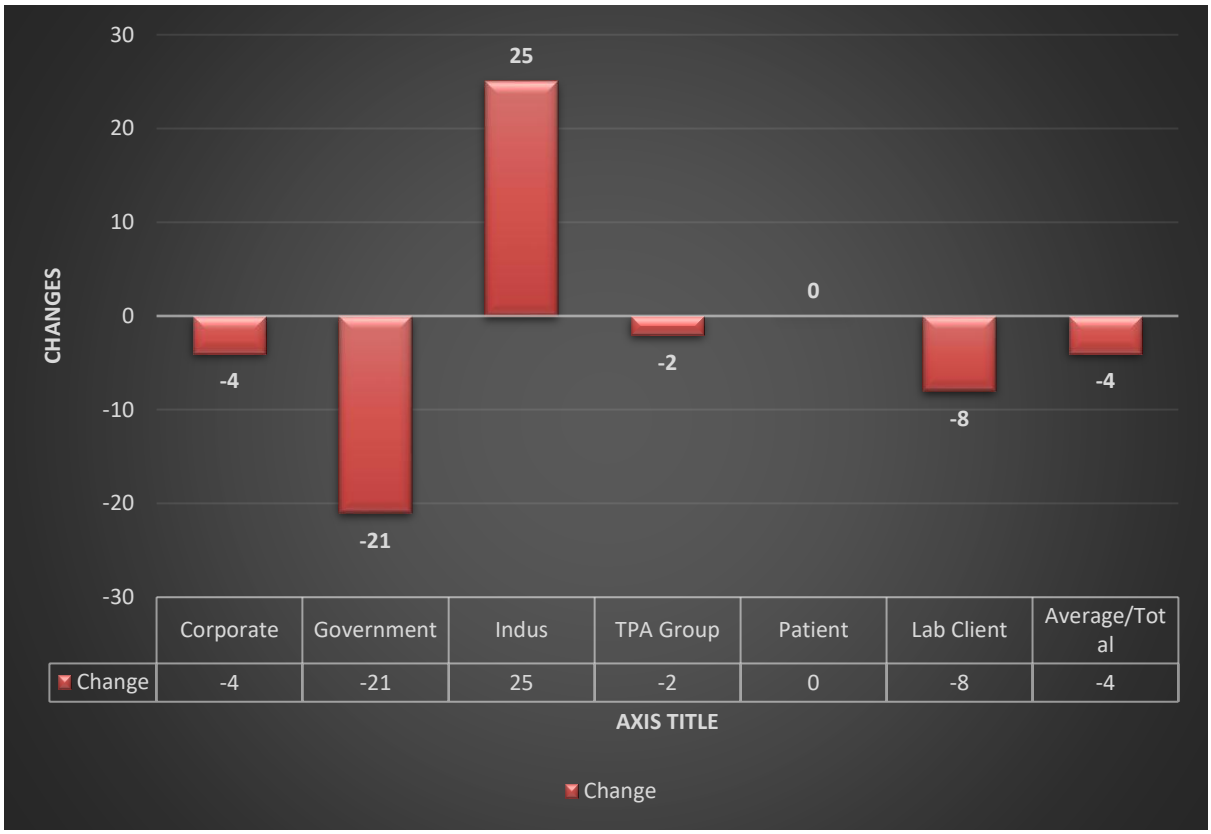


**Figure 5.13 Change in DSO**

The DSO for February to March 2025 indicates a 4-day improvement, with the average DSO reducing from 33 to 29 days. Significant decreases were seen in the Government and Lab Client categories, with DSOs dropping by 21 and 8 days, respectively, indicating better collection efficiency. DSO in the Corporate and TPA Group categories decreased somewhat, indicating improved payment collection. However, the Indus category saw a significant 25-day increase in DSO, indicating potential delays or inefficiencies in the payment process that require correction. The Patient category remained steady, with no changes to DSO. Overall, while most categories showed favourable growth, Indus' increased DSO deserves additional scrutiny**.**

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# CHAPTER 6: CONCLUSION

## Top 3 Departments Contributing to Revenue Leakage

1. **Insurance/TPA Desk** – Claim denials, pre-auth issues.
2. **Finance/Accounts** – Delayed collections and follow-ups.
3. **Billing Department** – Delays in final bill generation.

The analysis of Revenue Cycle Management (RCM) at Sahyadri Hospital, Kothrud, reveals that revenue leakage is not merely a financial concern but a direct outcome of operational inefficiencies across key departments. The high insurance claim denial rate—peaking at 45% in April—reflects systemic issues related to documentation errors, policy exclusions, and verification gaps. These denials not only delay cash inflow but also burden administrative teams with resubmissions.

Final billing turnaround time remained consistently above the NABH standard of 2 hours, averaging around 3 hours and 45 minutes. This highlights a need for better coordination among billing, clinical, and discharge teams. Though outstanding dues reduced significantly from government and TPA segments, an increase in receivables from lab and Indus clients indicates unresolved gaps in follow-up and collection strategies.

Furthermore, a rising trend in discharge processing time, while still within limits, may contribute to delayed billing and reduced patient turnover efficiency. The Days Sales Outstanding (DSO) metric showed overall improvement, but specific payer categories still require targeted interventions.

In conclusion, the study emphasizes that untracked operational delays—whether in billing, insurance processing, or discharge—have a cumulative effect on hospital revenue. Strengthening interdepartmental coordination, standardizing documentation, and implementing proactive denial and AR tracking systems are essential steps to minimize revenue loss and enhance financial sustainability.

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# RECOMMONDATIONS

## 1. Billing Department

• Automate final billing processes with EHR/EMR integrations.

• Integrate EHR/EMR to automate final billing triggers.

• Track billing time by case type and prioritise insurance discharges.

• Train staff to adhere to the NABH 2-hour norm.

## 2. Address Claims issues :

- Need to look into claims denial rates as its exceeding the standard value by following pre discharge audits to measure accuracy .
- Imply as separate Task force for this issues to handle such denials
- Strengthen and streamline partnerships and communication with all insurers—prioritizing top performers like Bajaj Allianz, Star Health, and HDFC ERGO for faster claims
- Supporting growing and smaller insurers such as GoDigit, Niva Bupa, SBI General, and Universal Sompo to reduce delays and improve patient guidance.

## 3. Strengthen Discharge Coordination

- Introduce discharge tracking dashboards (Electronic medical records).
- Real-time interdepartmental clearance via mobile/desktop alerts
- Daily review of high TAT discharge cases

## 4. Improve Insurance Education

- Provide patients with pre-admission insurance briefings
- Display surgery waiting period, coverage limits prominently in OPD/IPD
- Also provide the inter departmental coordination between Operations and Insurance is needed as its time taking .

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## 5. Suggestions to Plug Leakage

- **Automate documentation checks** at MRD and insurance desk.
- **Improve interdepartmental coordination** for discharge and billing.
- **Conduct regular denial audits** with department-wise feedback.
- **Enforce SOP adherence** for insurance verification and clearance timelines.
- **Track AR aging reports** department-wise monthly.

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