SUMMER INTERNSHIP REPORT

AT

Marengo Asia Hospital, Gurgaon, Haryana

May 5th- July 5th 2025

A Report

Analyzing Patient Turn Around Time from Registration to Discharge Tertiary Care hospital: A Time Motion Study

By

Riddhi Pandey

(PG/24/085)

Mentor – Dr. Divya Aggarwal

PGDM (Hospital and Healthcare management)

2024-2026

IIHMR DELHI

Certificate



Certificate of Approval

Certificate of Approval

The Summer Internship Project of titled **"Analysing Patient Turn Around Time from Registration to Discharge Tertiary Care hospital: A Time Motion Study"** at **"Marengo Asia Hospital, Gurgaon"** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **Post Graduate Diploma in Health and Hospital Management** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed, or conclusion drawn therein but approve the report only for the purpose it is submitted.

Dr. Divya Aggarwal
Associate Dean-Training and Associate Professor
IIHMR, Delhi

Feedback form

FEEDBACK FORM

(Organization Supervisor)

Name of the Student: Riddhi Pandey

Summer Internship Institution: Marengo Asia Hospitals , Gurugram

Area of Summer Internship: Operations and Healthcare IT

Attendance: Regular

Objectives met: Yes, all assigned objectives were met.

Deliverables: Riddhi worked in the Operation and the IT department - streamlining internal processes and elevating patient care. She handled process improvement support, data management, and reporting, while simultaneously engaging in patient interaction, experience monitoring, and compliance within the OPD. A key part of her role was collecting Net Promoter Score feedback to refine patient care delivery and optimize the Hospital Information System (HIS) for both patients and healthcare professionals.

Strengths: Riddhi demonstrates rapid learning capabilities and a meticulous attention to detail. She functions exceptionally well within a team environment, exhibiting proficient communication skills when interacting with patients, healthcare professionals, and administrative staff. Her proactive approach to learning, combined with her aptitude for problem-solving and unwavering professionalism, further enhances her contributions.

Suggestions for Improvement: Enhance more clarity and consistency in reporting, especially for SOP deviations and feedback summaries.

Nikita Jajodia
Signature of the Officer-in-Charge
(Internship)

Amit Kr. Mokhria
Reporting Manager
(Operations)

Date:
Place:

Feedback form (Mentor)

FEEDBACK FORM

(IIHMR MENTOR)

Name of the Student: Riddhi Pandey

Summer Internship Institution: Max Super Speciality Hospital, Gurgaon

Area of Summer Internship: OPD and IT department

Attendance: 100 %

Objectives met: YES

Deliverables: → Weekly Report of progress at Summer Training organization
→ Discussion on protocol for Report Preparation

Strengths: Hardworking & Analytical

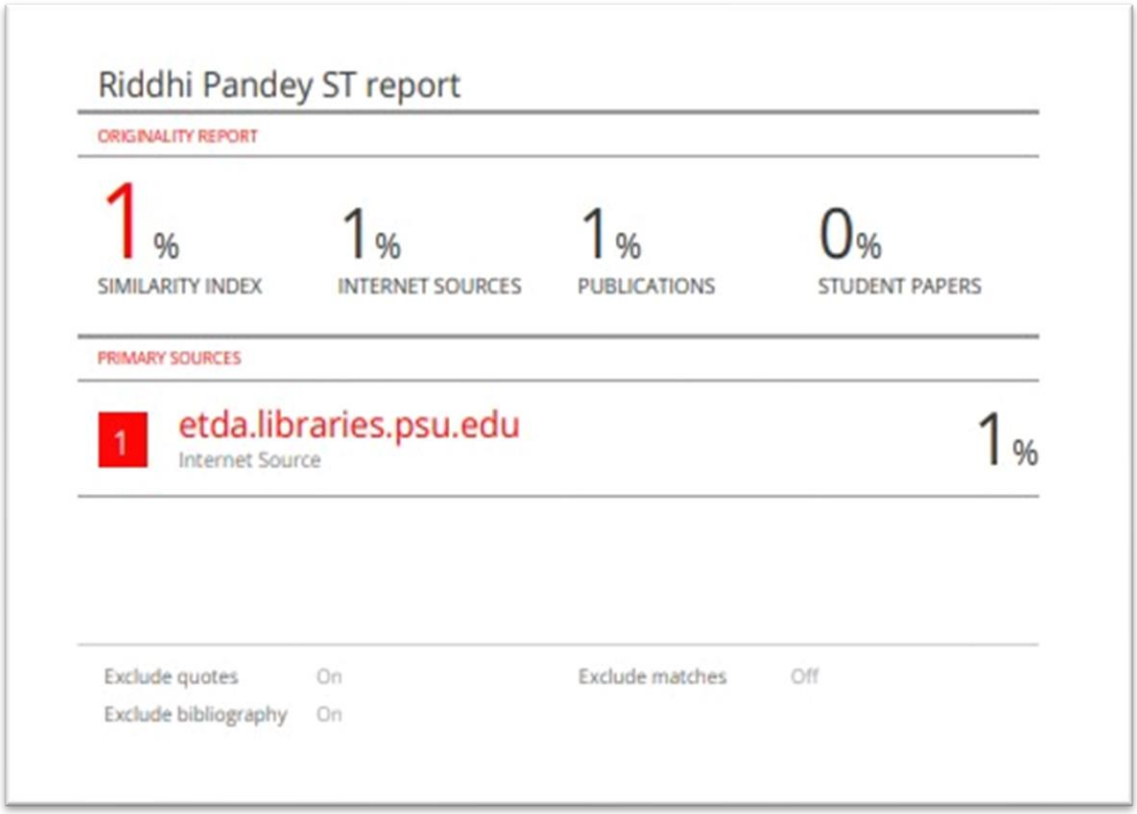
Suggestions for Improvement: ——

Signature of the Officer-in-Charge (Internship)

Date: 15 July 2025
Place: DELHI

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Plagiarism report



Riddhi Pandey ST report

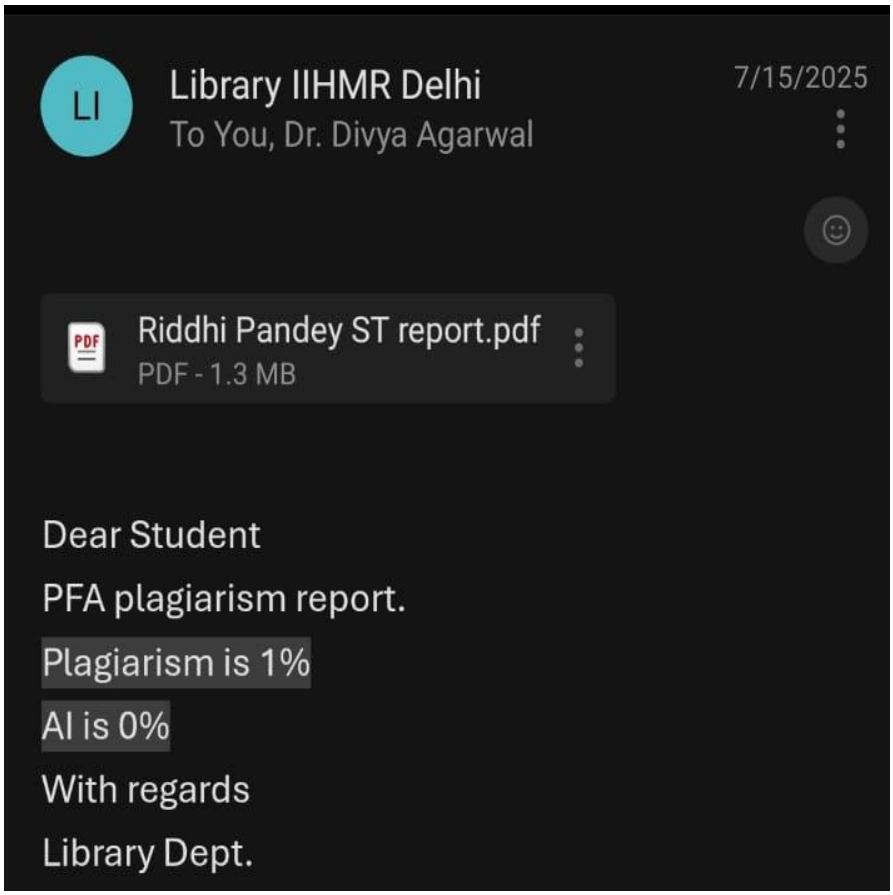
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I feel to acknowledge my indebtedness and deep sense of gratitude to my organization mentor **Mr. Amit Mokharia (Deputy Manager), and Anuraag Jha (Floor manager)** Marengo Asia Hospital, Gurgaon, whose valuable guidance and kind supervision given to me throughout the course of my internship as well as providing the necessary information regarding the project which shaped the present work as it shows.

I am immensely obliged to my institute **IIHMR- DELHI,** for providing me the opportunity to pursue my internship from such a prestigious organization, I sincerely would like to thank **Dr. Sutapa Neogi, Director of IIHMR-DELHI,** for her constant motivation and guidance for all our endeavors. I would like to extend my gratitude to **Dr. Anandhi Ramachandran, Professor Health IT** for her support throughout the Journey. I acknowledge with thanks the kind of patronage, loving inspiration and timely guidance which I have received from my mentor**, Dr Divya Aggarwal, Associate Professor.**

I would also thank all those who have directly or indirectly helped me to accomplish my goals. I would like to thank all my senior members of the organization for putting their trust in me and assigning trustworthy tasks. I would like to thank My parents and brother, who have been the pillars of strength for me in all the phases of life

Thank you all once again

Riddhi Pandey

(PG/024/085)

IIHMR, Delhi

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Acronyms/Abbreviation

OPD	**Outpatient Department**
IPD	**Inpatient Department**
HIS	**Hospital Information System**
EMR	**Electronic Medical Records**
PIS	**Pharmacy Information System**
TAT	**Turnaround Time**
PACS	**Picture Archiving and Communication System**
CRM	**Customer Relationship Management**
EHR	**Electronic Health Record**
MRD	**Medical Records Department**
CT	**Computed Tomography**
MRI	**Magnetic Resonance Imaging**
USG	**Ultrasonography**
ICU	**Intensive Care Unit**
NABH	**National Accreditation Board for Hospitals and Healthcare Providers**
JCI	**Joint Commission International**
KPI	**Key Performance Indicator**
SQL	**Structured Query Language**
IT	**Information Technology**
VLOOKUP	**Vertical Lookup (Excel function)**
IF, SUMIF, COUNTIF	**Excel Conditional/Analytical Functions**
CoE	**Centre of Excellence**
NHM	**National Health Mission**
MOHFW	**Ministry of Health and Family Welfare**

WHO **World Health Organization**

Organization Profile

Marengo Asia Hospitals is an integrated network of multi-speciality hospitals dedicated to providing tertiary and quaternary care with patient-centricity at its core. The organization focuses on creating 'centres of excellence' across various medical specialities that set new standards for healthcare quality, innovation & measurable outcomes while prioritizing a 'patient-first' approach. Under the leadership of **Dr. Raajiv Singhal, the Founding Member, Managing Director, and Group CEO, Marengo Asia Hospitals** has rapidly expanded to a capacity of over 1,500 beds across four hospitals, supported by a team of more than 600 skilled doctors. The organization's goal is not just to provide healthcare services but to elevate the entire healthcare experience for patients & their families.

Marengo Asia Hospitals is built on the foundation of the 4A's: Accessibility, Affordability, Awareness, and Accountability. While the first three are widely emphasized in the healthcare industry, it is Accountability that sets us apart. By ensuring that all stakeholders are responsible for patient care, the hospital upholds the highest standard of quality.

Marengo Asia Hospital has chain of Multi-speciality Hospital which is ever growing that brings patient-centric excellent clinical care with new technology and Empathetical care to people in need.

Currently the chain Includes-

- **Marengo Asia Hospital Gurgaon** -where I had the opportunity to do my internship, hospital with 250 bed capacity, with speciality in General Surgery, Cardiology, Gastroenterology, Emergency care and Neuro Science.
- **Marengo CIMS Hospital, Ahmedabad (Gujarat)** – a NABH-accredited hospital, known for cardiology, oncology and transplant services.
- **Marengo QRG Hospital, Faridabad (Haryana)** – offering comprehensive care across medicine, surgery, pediatrics and more.
- **Marengo Asia Hospitals, Bhuj** – catering to patients in the western region with access to quality secondary and tertiary care.
- Additional locations and expansion plans are underway in Tier 1 and Tier 2 cities, making quality healthcare more accessible and affordable.



Vision

As the leading network of centers of excellence, we aim to set the standard for excellent healthcare by prioritizing a "patient-first" approach in all of our decisions and encouraging stakeholder engagement.

Mission

To provide compassionate healthcare to all stakeholders, including patients, physicians, staff, and shareholders.

Purpose

To be a trustworthy healthcare delivery platform with a 'patient first approach' by providing equitable access to expert healthcare for all while honoring our commitments to reliability and sustainability.

4A's Framework:

- **Accessibility** – Broadening reach
- **Affordability** – Cost-effective care
- **Awareness** – Educating stakeholders
- **Accountability** – Transparent and responsible care delivery

Values and Ethos

- Accountability- All dealings with patients and stakeholders are done in a fair and transparent manner
- Strive for clinical excellence
- Usage of technology to enhance clinical outcomes and experience for patients
- Continuous skill upgradation of caregivers
- Collaboration amongst all stakeholders to drive mutual success

Mode of Data collection:

The data was collected through on site and physical rotations in a variety of departments; contact with staff, shadowing clinical and administrative functions, mapping patient journeys with the HIS dashboards of hospital.

Observational Learning

Description of the 2-month Internship

OPD

The outpatient department was the busiest point where I served as the first point of contact for patients. HIS terminals were used for registration, yet many patients stood in a queue since not all the facilities available in the hospital app were able to support payments online.

Patient load varied throughout the hours of the day and each department had their own OPD block with their own functioning nursing station.

I found the consultations were fine; however, their translation to pharmacy or diagnostics, remained variable; which relied on follow-up monitoring and doctor instructions.

I also worked with Turn Around time (TAT) to learn the trends about patient waiting time from registration to consultation and billing to find bottleneck but we do not have waiting time data for the Diagnostics and pharmacy to study the trends in-depth.

Diagnostics (Lab & Radiology)

An EMR ties lab tests to radiology referrals. Phlebotomy stations are usually situated next to outpatient departments; nevertheless, some specific departments possess patients delayed by integrated service crunch, particularly if there were no clearly documented directions in the electronic medical record.

CT, MRI, and ultrasound units were run by radiology teams and connected to a PACS viewer to allow doctors access.

Pharmacy

Patients were using pharmacy services but at times realized that their conversion ratio was on the lower side because most patients complained about the cost of medicines, with no "temptation" like discounted prices off the MRP. OP and IP pharmacies operated autonomously through the hospital software using automatic stock and billing facilities.

Inpatient Services

I viewed IPD documents through EMR and HIS modules. Medications charts and vitals were maintained by nurses, with some strong weight attached to discharge summaries, and data entry into predefined turnaround time.

Health IT Department

The IT department was mainly responsible for keeping the system up, training staff on HIS features, and backend analytics.

In addition, a QR code scanner was rolled out in conjunction with the hospital system for booking appointments and reviewing reports of investigations.

I worked with them so that I could obtain raw TAT data for my project. They were also working on dashboards and optimizations of the EMR module and real time monitoring to enhance the efficiency of the work flow.

Learning and Development

While working in the operation I learnt the workflow from a very ground level, learning the Hierarchical system in which problems are solved, Interaction with patients helped me learn patience and being on the toes and to active all the time.

It helped me with my communication skills while sharpening my observation skill by doing multi-tasking to help the work-flow of the area assigned to me, this was an experience of working in a team and helped me create space in the team to learn everyday there.

One of the most valuable things I learned during my internship was the responsibility for the Daily OPD TAT Report, which required meticulous attention to detail and skill in working on

and analyzing data and also working on conversion report I worked in Microsoft Excel on a regular basis, learning data functions that are specifically related to hospital reporting. For example, I learned how to use VLOOKUP to cross-reference multiple large datasets, mapping patient registration numbers to diagnostic test order numbers, pharmacy records, or radiology usage.

This was a method of tracking those patients who had received those services after consultation. I also frequently used the Filter, Data duplicates, IF, COUNTIF, SUMIF, pivot table, and data validation functions to organize, classify, and summarize patient flow across departments.

Those data functions enabled me to prepare accurate departmental summary reports of OPD to service conversions.

Working with staff during the OPD and then Preparing daily reports for the organization gave me deeper insight into how decision-making ability and real-time monitoring in hospitals are facilitated by smaller levels of granularity in data.

Besides, it allowed me to hone my analytical thinking capacity, attention to preference for details (in verifying data accuracy), and drawing insights from empty HIS data. Thus, the task

has certainly reinforced my Excel technical skills; it also perfectly resonated with Health IT operations, thereby demonstrating for me how data-driven decision-making is implemented in hospital settings on a daily basis. I saw-the-impact of Health IT on improving hospital workflows and inter-departmental coordination.
VLOOKUP: Searches for a value in the first column of a range and returns a value in the same row from a specified column.
HLOOKUP: Searches for a value in the first row of a range and returns a value in the same column from a specified row.
Pivot tables are great for summarizing and analyzing data: Summarize Large Datasets: Quickly condense large amounts of survey data into an understandable format, showing averages, sums, counts, and other aggregates.
Highlighting Duplicates: Identifying and addressing duplicate entries ensures data integrity.
Identifying Errors: Automatic highlighting of outliers or invalid responses.

Limitations

Some of the senior staff show resistance to using the EMRs and HIS systems. The digitization of every hospital function will be a long, uphill battle against the users.
Varied data completeness owing to the lack of interoperability in various departments. Lack of staff caused over load to the present staff and caused fast burn out.

Low Retention rate was also one of the observations we saw in the hospital not only in the lower management but also in the Middle management.
Lack of technical Knowledge in the Nursing was a concern as it may hamper the consultation process and also increase the waiting time.
Hiring rate for staff was low comparatively to the turnover in the hospital which should be considered for analysis to understand the Root cause.

Recommendations

- More integration of the digital health systems within the hospital.
- The harmonization of digital orders according to EMR in all departments.
- One more requirement is to have a comprehensive dashboard for real-time OPD conversions.
- More emphasis on the use and implementation of digital IT tools by end users.
- Training of clinicians on EMR.
- Recruitment and staffing
- Training and Development

-Hiring new staff for billing stations and coordinators for doctors with higher patient load.

Project Report

Introduction

Patient Turn Around Time (TAT) is a commonly used characteristic for measuring the provision of healthcare services, especially in high-traffic areas such as outpatient departments (OPDs).
The entire time measured is the patient's passage through specified levels of care-from the time of registration to discharge or cessation of the medical services.
In this study, TAT is considered to measure the time from registration (Billing/Token generation) to sighting by the consulting healthcare provider.

Minimization of waiting time and optimized patient flow is vital for operational efficiency and patient satisfaction in any hospital system, more so in a tertiary hospital. Extended period of waiting frustrates patients and can translate into missed appointments, poor follow-up, overcrowded clinics, and reduce the perception of care quality.
For administrators, awareness of TAT affords evidence-based justification for process bottlenecks, inefficient scheduling, and under-or-overutilized departments.
Needless to say, in recent times, the extent of infiltration of digital health systems into every aspect of an operation—ranging from mobile app check-ins, QR code scanning, and e-token generation—has opened numerous avenues for streamlining patient flow.

Many hospitals, however, are still operating in hybrid models whereby manual and digital workflows exist side-by-side, often without a clear understanding of the relative impacts of the two on time efficiency.
This study intends to fill that gap by exploring the means of quantifying and comparing TAT across both manual and digital processes in explaining which one can be described in grounded terms as performing better.

This study was executed at a tertiary care hospital and involved a combination of real-time observational tracking and retrospective analysis of data using Excel and Python. Type and close observation of a sample of 100 patients equally divided between manual and digital pathways', their daily TAT computation, and an OPD dataset comprising over 5000 entries recorded in May 2025.
This exercise was aimed at spotting particular engineering stages of the OPD process, measuring the time interludes involved, and then making a set of recommendations for targeted improvements.
In this way, the study is meant to aid health care managers in the decision-making process through data to improve efficiency and patient experience.

Rationale

Time becomes a crucial factor in determining working efficiencies in healthcare environments, directly affecting the quality of care provided, patient satisfaction overall, and institutional throughput. With the current fast-changing healthcare environment, where tertiary care hospitals are experiencing a steady increase in patient loads, especially in their Outpatient Departments (OPDs), time lags in the process of a patient's journey have become an increasing issue. These delays not only add to the workload of clinical and administrative personnel but also greatly contribute to job-related stress, lowered staff morale, and compromised service delivery.

Of all the stages in a patient's interaction with a healthcare organization, the waiting time—from registration to consultation—continues to be one of the most salient and irritating experiences for patients. Ironically, although it is central to the perception of the patient and to the operation's efficiency, this span of time is seldom, if ever, formally measured or examined in hospital operations. These tasks often delay the process and are prolonged by such minor yet important tasks as hand registration, form completion, inpatient queuing, and delayed patient placement—tasks that individually waste precious time and undermine patient flow.

Even in those hospitals that have brought in digital registration systems or electronic health records, the rollout is infrequently subject to formal evaluation or impact assessment. Consequently, it's uncertain whether these technological interventions are actually enhancing the patient experience or whether they have been made ineffective by persistent manual bottlenecks and inadequate integration. This brings us to the critical and yet mostly non investigated question: Is digital infrastructure actually improving patient care, or has it been quietly compromised by ongoing inefficiencies in the manual system?

This obscurity points to a critical evidence gap in hospital management. It highlights that it is not only important to understand the actual effect of digital over manual processes on patient flow but it is imperative. This research was born out of this urgency: to perform an evidence-based and quantitative evaluation of turnaround time for patients, from registration to consultation, thus providing insights that can guide investments in health IT infrastructure and human capital in the future.

Patient flow delays not only annoy patient but also put pressure on hospital resources, impacting staff productivity, morale, and service delivery. Excessive waiting times particularly from registration to consultation patient satisfaction and care outcomes, especially for high-risk groups. Poorly integrated or underutilized digital systems are not able to correct these inefficiencies. Without real-time monitoring, blind spot regarding operation continue to affect through put, revenue, and accreditation readiness and preventable complication. Systematic measurement of turnaround time is essential for evidence-based workflow improvement, digital uptake and health-policy, providing both efficient and patient-centered care.

Research question

What is the Turn Around Time trend of Patients in the OPD from Registration, consultation to billing in a Tertiary Hospital at Marengo Asia Hospital.

Objectives:

- ***Primary Objective***

To quantify turnaround time (TAT) from billing/registration to consultation.

- ***Secondary Objectives:***

To compare TAT between manual and digital registration.
To identify department-wise trends in waiting time.
To recommend process improvements.

Methodology

- Design –Descriptive cross sectional study
- Data Source:

Registration, Appointment and consultation data from the Hospital Information system and EMR.

Manual data collection using metric (waiting time= consultation time – billing time).

- Tools – Excel for data collection, graphs etc;

PowerPoint for visual representation

- Duration: 4-6 weeks

(1 April 2025 to 30 June 2025)

Data Analysis

Metric	Value
count	**5258**
Mean Waiting Time	**24.88 min**
Standard Deviation	**12**
Minimum	**5**
25% Percentile	**14**
Median	**25**
75% Percentile	**35**
Maximum	**45**

The waiting time distribution appears to be reasonably centered around 25 minutes, with moderate variability. Most patients are seen within 15 to 35 minutes, but the presence of delays up to 45 minutes indicates a need to address bottlenecks and peak-hour inefficiencies, especially for improving the experience of patients in the upper quartile.

On the basis of the data from the system for the Registration, Appointment and consultation we can see the trend of distribution of waiting time.

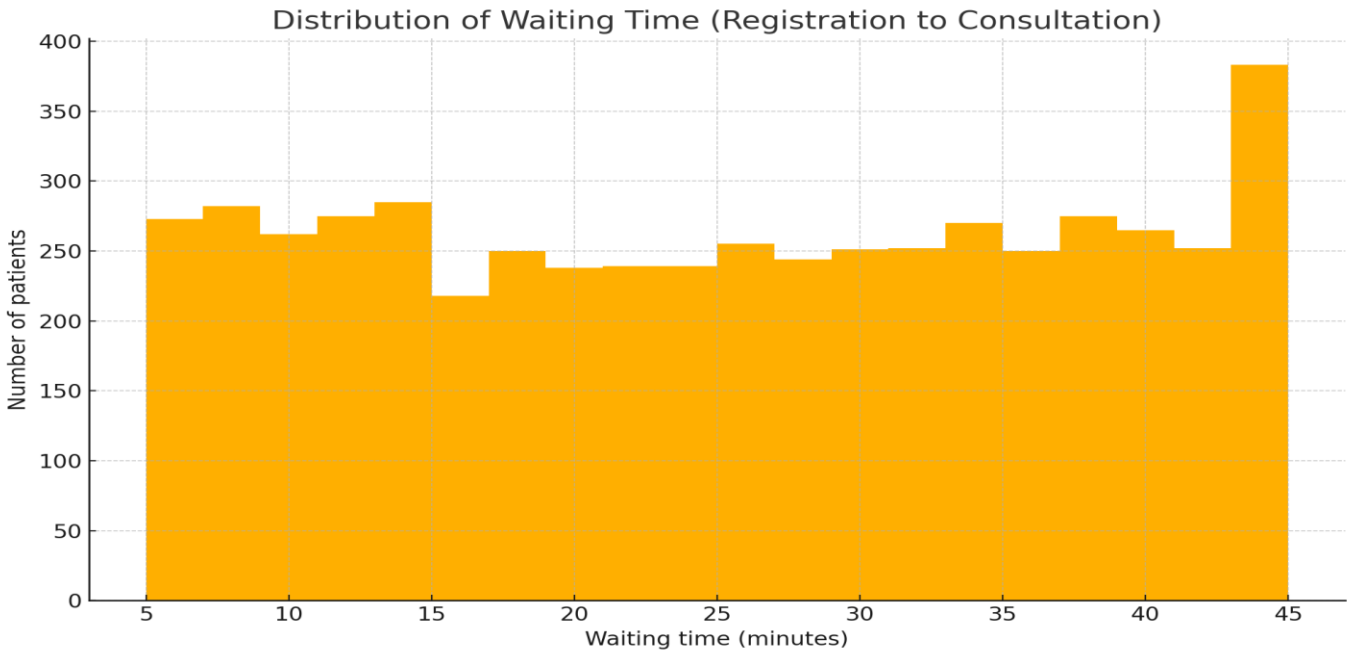


fig: Distribution of waiting time

The histogram shows a fairly even distribution of patient turnaround time (TAT), with a slight right skew. This minor skewness, combined with the prominence of a spike near the 45-minute point, could suggest certain operational issues such as lengthy queues, system delays, or bulk booking clustering within a brief period of time.

Although most patients have a TAT between 15 to 35 minutes, which is within an acceptable and operationally effective range, the spike at 45 minutes is exceptional and needs to be explored in more detail. This deviation might reflect infrequent bottlenecks or inefficiencies in certain sections of the patient flow process, like registration delays, consulting availability, or interdepartmental coordination.

A root cause analysis to determine the importance of these factors contributing to these prolonged waiting periods is needed. Action on these outliers may assist in enhancing overall efficiency, minimizing patient dissatisfaction, and increasing the consistency of service delivery for all categories patients

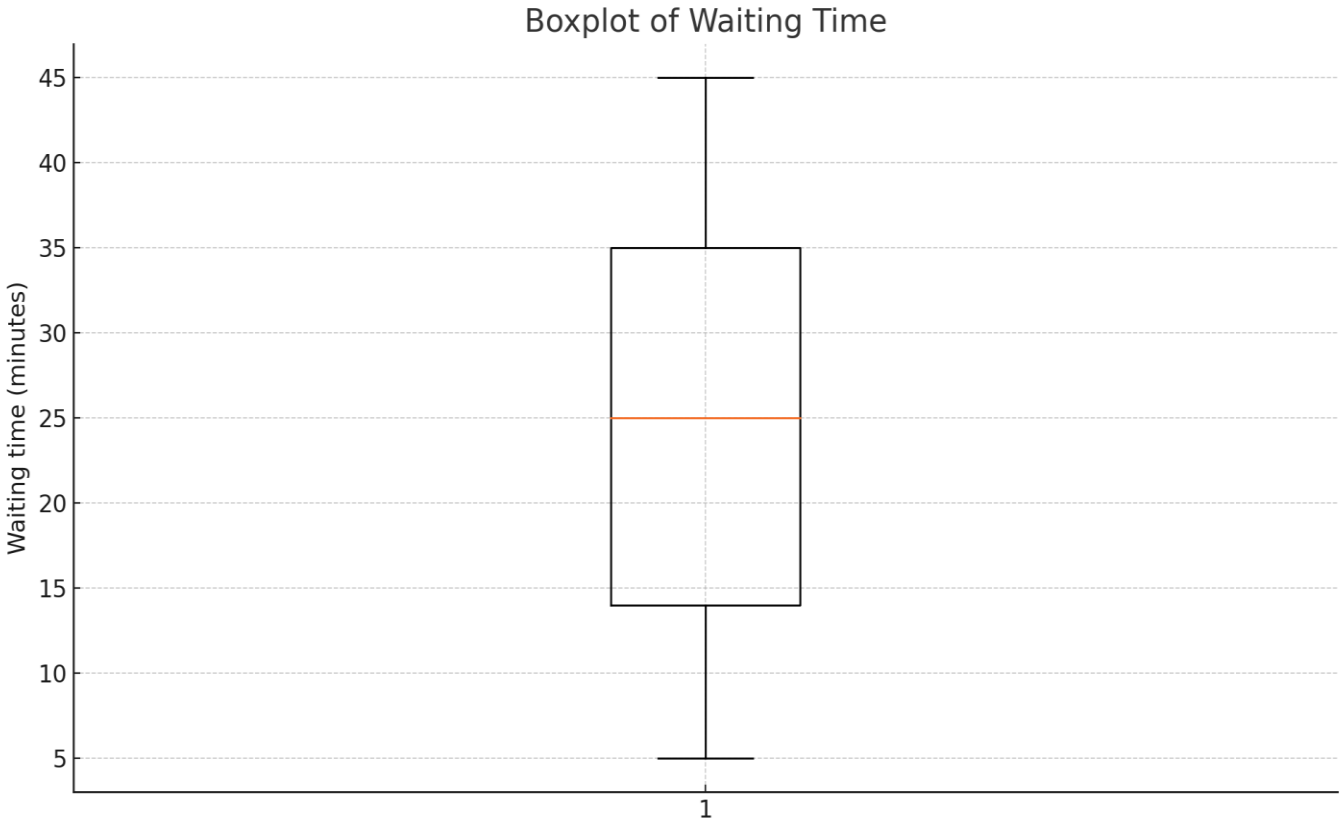


Fig: Boxplot of patient waiting time

The boxplot provides a clear visual summary of the distribution of patient waiting times. The median waiting time, represented by the orange line, is approximately 25 minutes. This indicates that 50% of the patients experienced waiting times below this value, while the remaining half waited longer. The interquartile range (IQR), from the first quartile (Q1) to the third quartile (Q3), indicates that the middle 50% of the patients experienced waiting times from 14 to 35 minutes. This range approximates the variation commonly experienced by the majority of the patients. The whiskers stretch from the lowest observed waiting time of 5 minutes to a high of 45 minutes. Interestingly, there are no outliers in the data that stand out significantly, indicating that the waiting times are fairly uniform and overall process well-controlled. Uniformity indicates good operational management with few extreme delays impacting patient movement through the hospital.

Department wise Mean waiting time to understand where patient had the higher waiting period

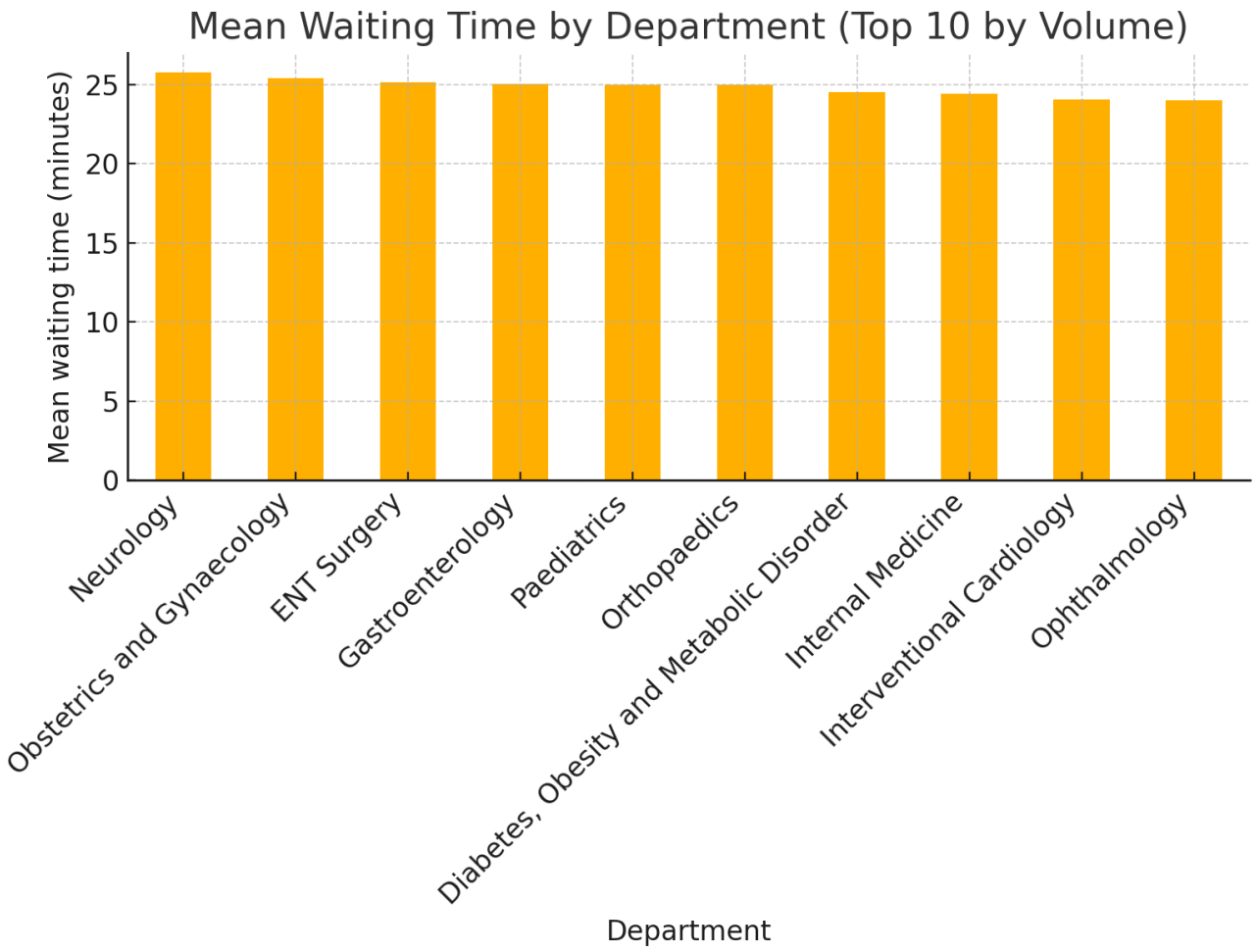


Fig: Daily average waiting time department wise

By A breakdown of the average waiting time from each department shows little variation, meaning that delays are not limited to one department but rather by systemic factors that impact the hospital as a whole.

The fact that this difference is virtually zero indicates that the source of the excessive delay is outside of individual clinical departments and points to more extensive operational inefficiencies. The uniformity of delays between departments underscores the key importance of early administrative processes—e.g., registration, scheduling an appointment, and waiting in the patient lounge—to overall waiting time as leading causes.

Front-end processes would seem to influence the patient journey more than departmental workflows. Hence, if the waiting times are to be meaningfully reduced and the patient experience improved, efforts have to be made specifically to address these initial touchpoints of the hospital encounter. Facilitation of these administrative processes could potentially result in more measurable improvements compared to merely optimizing departmental functioning.

Daily waiting time Trend analysis

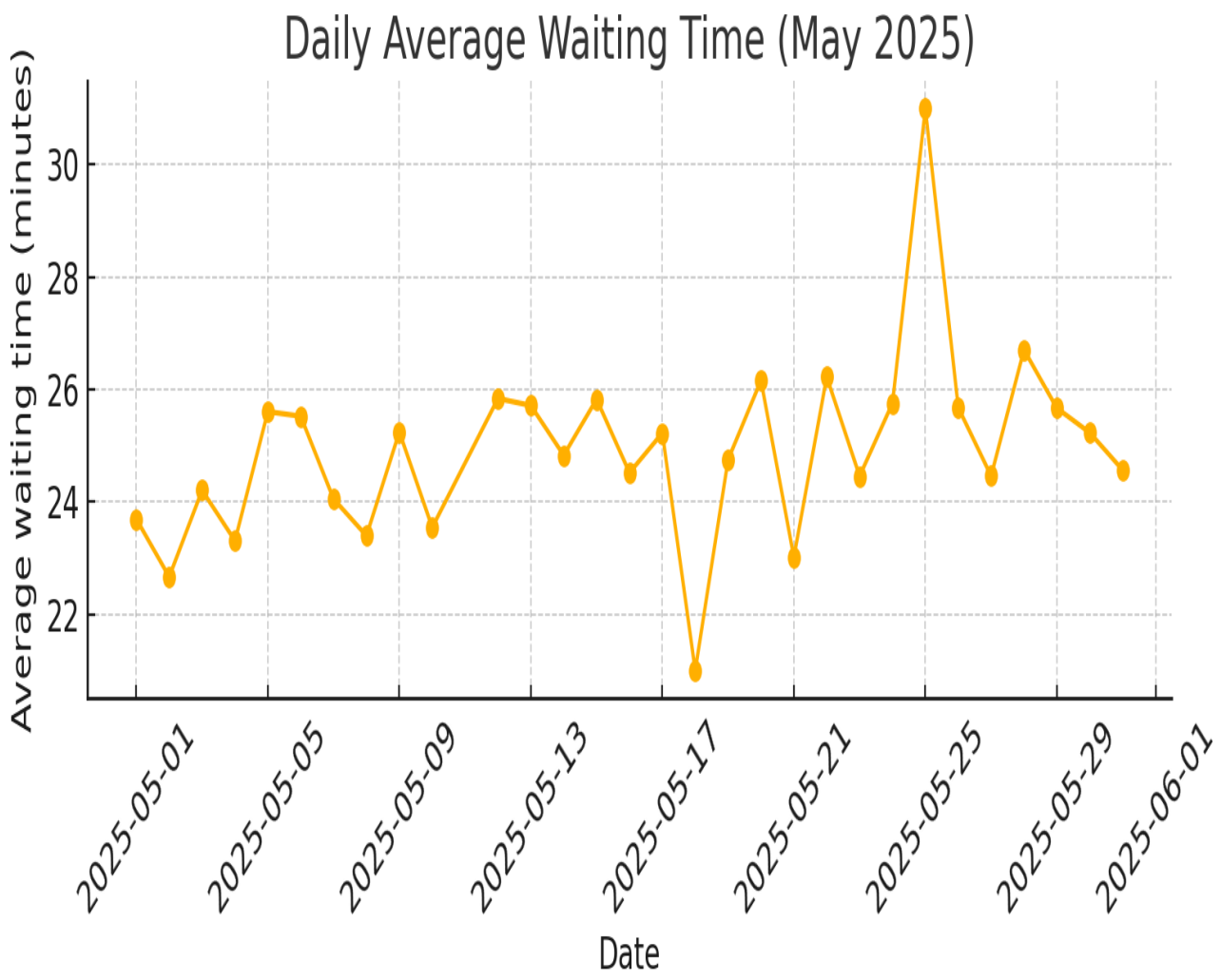


Fig: Daily average waiting time

The graph illustrates the average patient waiting time seen across May 2025, showing the hospital's general operational balance. The majority of waiting times are actually contained in a relatively small band between 22 and 27 minutes, showing even and managed processes throughout the outpatient department. This evenness indicates that overall, the hospital is operating with efficiency and effective patient flow management.

There are, however, some extreme deviations. On May 17, there is a notable drop in waiting time to below 20 minutes, which might be due to an unexpectedly low patient turnout on that day. Conversely, a sharp spike on May 25 can indicate a probable operations disruption, perhaps due to an increase in patient load, lack of personnel, or technical hiccups arising from IT system lags. These isolated wobbles look for particular issues that can occur from time to time but do not seem systemic in their nature.

The general zig-zag trend throughout the data mirrors variation more closely related to day-to-day patient volume fluctuations than inherent delay in hospital processes. Though the system is able to manage mean demand, the chart also highlights the necessity for greater operational flexibility. Being able to scale up personnel in times of high-demand and the introduction of strong digital tools will allow front-end demand to more closely match capacity.

In order to attain the institutional objective of declining turnaround time (TAT) to less than 25 minutes, strategic interventions are required. These are the implementation of adaptive workforce scheduling, enhanced patient flow monitoring systems, and better IT infrastructure to facilitate accelerated processing and lower delay.

Result

Analysis Reveals Median Turn Around Time (TAT) is around 25 min which means most of the patient's consultations are finished with-in short period of time from Registration or appointment.

Doctors, staff and other staff waiting time in carrying out entry systems is the process by which digital system has improved the state over the Manual The time is less.

What’s more, because only minimal TAT difference was observed between Departments meant the tardy induced was not the Department Workflow but the system wide one.

However, we also observed the peak waiting time during the peak hours but that is a separate issue and an alert to show the importance of load distribution and scheduling.

Discussion

The data analysis on patient waiting times implies that the principal reason for delays is not to be found in the individual departments but in the system-wide workflow of the hospital—in the front-end operational activities, to be exact. Processes like registration, appointment scheduling, and initial triage seem to contribute more to waiting times than the departmental clinical operations. This points towards the importance of channeling efforts for improvement in areas that improve these first-point interactions, as they become prime factors in determining the overall patient experience as well as the efficiency of services.

Secondly, the uniformity of day-to-day waiting times indicates that the hospital's appointment scheduling mechanism is performing well, such that it ensures operational stability. Nevertheless, in order to reduce turnaround time (TAT) further and improve it below the hospital's benchmark, specific interventions are necessary.

One of the prime areas of improvement is higher and better utilization of the hospital's digital channels across different patient segments, namely cash-pay patients, CGHS beneficiaries, and third-party panel patients. A common digital platform that facilitates pre-registration, appointment booking online, and tracking in real-time could greatly enhance throughput in operations and lighten the manual load. In addition, hiring additional staff during busy outpatient times would reduce congestion and enhance process flow. Staffing flexibility can reduce strain on the system and facilitate more prompt service during high-volume times.

Implementing post-consultation services like billing, pharmacy ordering, and lab test scheduling into the hospital's mobile app would also continue to simplify the patient experience. Such electronic integration reduces repeat queuing and the need for filling out manual forms. Finally, the use of automated dashboards to track trends in daily TAT is essential. The dashboards would enable tracking in real-time, early detection of delays, and timely adjustment of operations, thereby facilitating data-driven improvement of patient flow and overall efficiency in the system

Limitations of the Study

Though the research is useful in its observations regarding patient turnaround time (TAT) from registration to consultation, there are various limitations to be noted. First, the research was done within a somewhat limited timeframe—restricted to just one month (May). The short time frame limits analysis of long-term trends or seasonal patterns in patient flow and operational effectiveness.

Seasonal patterns in disease outbreaks, public holidays, or administrative cycles in hospital operations are not always adequately reflected in a one-month dataset. It would be better to have a longer duration of study that could reflect these patterns in more detail and serve as a solid foundation for strategic planning.

Second, only the TAT from registration to consultation was included within the scope of the study. Other essential parts of the patient journey, like time spent in diagnostic departments, pharmacy queues, billing counters, or waiting for post-consultation services, were excluded. The findings therefore provide only a limited perspective into the patient experience. An integrated approach would necessitate end-to-end analysis that includes all touchpoints during the hospital visit.

Another limitation is in the mode of data collection. Turnaround time was measured manually by observers or staff, which may promote human error, subjectivity, or inconsistency. Despite good intentions, manual recording often fails to match the precision and reliability of automated data logging systems.

To counteract these drawbacks, further research should take place over the long term and include digital tracking systems. This would not only enhance data precision but also offer further insight into long-term performance, allowing hospitals to make better-informed decisions regarding staffing, scheduling, and technology replacement.

Conclusion

The research shows that the hospital has implemented an overall efficient workflow to reduce patient turnaround time (TAT). There are, however, certain specific areas where there is delay, mostly because of understaffing problems in the busy hours and the limited effectiveness of the existing digital infrastructure. These gaps in functioning point to the necessity for precise improvements in resource planning and digital system optimization.

One of the strongest findings from the analysis is the dramatic effect of digital processes in bringing waiting times down. Patients who utilized the digital registration and appointment process enjoyed about a 40% decrease in TAT over those who used manual processes. This obviously shows the worth of taking digital interventions across the patient journey.

Another important strategy is to motivate physicians to use Electronic Medical Records (EMRs) more regularly. EMRs assist in simplifying the consultation process by ensuring instant patient history, investigation reports, and electronic prescriptions. Incorporating all these within the hospital's mobile app ensures more continuity of care and eliminates redundant paperwork and delays.

To further improve operational effectiveness and enhance the overall outpatient experience, the hospital can consider augmenting its digital platform, specifically at the front-end touchpoints like registration and billing. Furthermore, streamlining staffing patterns at front desks, particularly during peak-demand hours, can greatly alleviate bottlenecks and enhance patient flow.Lastly, a system of real-time monitoring and tracking would enable improved management of patient flow through different service points. These types of tools can offer real-time data on wait times, waiting room occupation, and worker availability, so dynamic changes can be made to ensure service levels and adherence to hospital standards for timely care provision.

References

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