

ASSESSMENT OF TURNAROUND TIME FROM TOKEN GENERATION TO BILLING COUNTER ARRIVAL FOR OUTPATIENT CONSULTATIONS AT RUKMANI BIRLA HOSPITAL, JAIPUR

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CONTENTS

Introduction

Aim & Objective

Methodology

Flow process

Findings

Key Factors

Recommendation

Conclusion

INTRODUCTION

- Efficient management of patient flow in Outpatient Departments (OPDs) is essential for delivering timely and quality healthcare services.
- While clinical care is a core focus, administrative processes such as billing play a significant role in shaping the overall patient experience.
- Delays in billing can result in overcrowding, longer waiting times, and patient dissatisfaction.
- Turnaround Time (TAT), defined as the time from token generation to billing counter arrival, serves as a key indicator of hospital service efficiency.
- Despite advancements in digital health systems, many hospitals continue to face challenges in maintaining optimal TAT due to administrative, technical, and patient-related issues.



RESEARCH QUESTION

What is the average turnaround time from token generation to billing counter arrival for outpatient consultations at Rukmani Birla Hospital, Jaipur?



AIM

To evaluate the efficiency of outpatient billing services by analyzing the turnaround time from token generation to billing counter arrival at Rukmani Birla Hospital, Jaipur.



OBJECTIVES

Primary Objective:

- To determine the turnaround time for billing services from token generation to billing counter arrival for outpatient consultations at Rukmani Birla Hospital, Jaipur.

Secondary Objectives:

- To identify the peak hours of billing activity.
- To compare turnaround times between the morning and afternoon shifts.
- To suggest practical process improvements for reducing billing turnaround time.

METHODOLOGY

A

Study Design

This is a descriptive cross-sectional study.

B

Study Setting

The study was conducted at Rukmani Birla Hospital, Jaipur, a tertiary-level multispecialty hospital.

D

Duration of the Study

The study was conducted over a period of 2 months, from 1st April 2025 to 31st May 2025.

E

Sample Size

A total of 255 patients were included in the study using a convenience sampling method.

C

Study Population

The study population consisted of patients attending the outpatient department (OPD) who were issued a billing token for consultation.

- **Inclusion Criteria**

Patients who collected a billing token for consultation.

Patients who provided informed verbal consent.

- **Exclusion Criteria**

Patients who did not complete the billing process.

Patients undergoing billing for inpatient services or emergency care.

F

Sampling Technique

Convenience sampling was employed, whereby eligible patients visiting the OPD during the study period and fulfilling the inclusion criteria were selected.

H

Study Tools

Structured Observation Sheet, Captured the following variables:

- Unique patient code (non-identifiable)
- Date of visit
- Time of token generation
- Time of billing counter arrival
- Shift (morning/ afternoon)

G

Data Collection Procedure

The data collection was performed by the researcher. All data were entered into Microsoft Excel for preliminary organization and cleaned prior to statistical analysis.

I

Data Analysis Plan

The data was entered and analysed using Microsoft Excel. The analysis included:

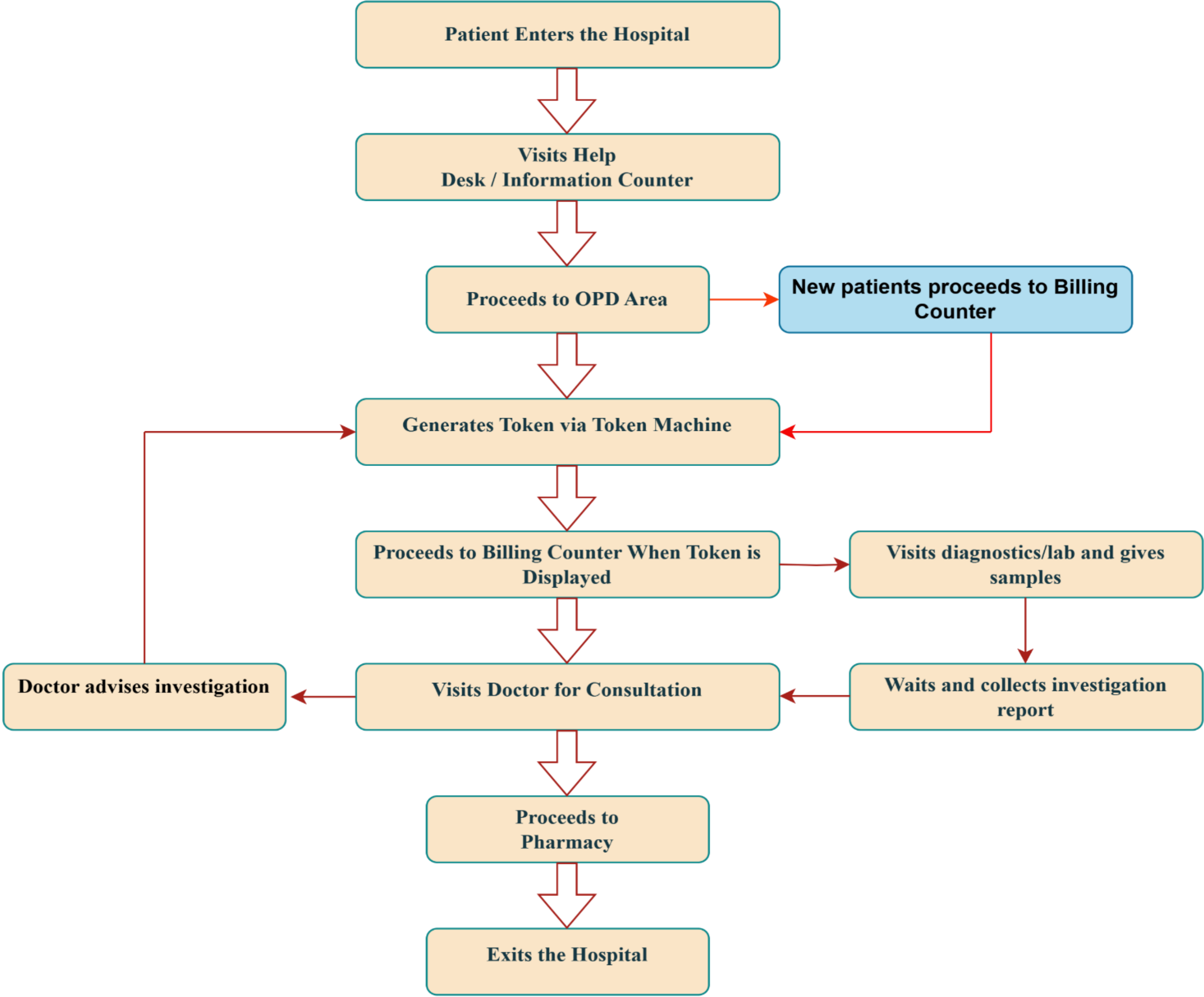
Descriptive Statistics:

Mean, median, and standard deviation of TAT across all patients.

Frequency distribution of TAT by shift (morning vs afternoon).

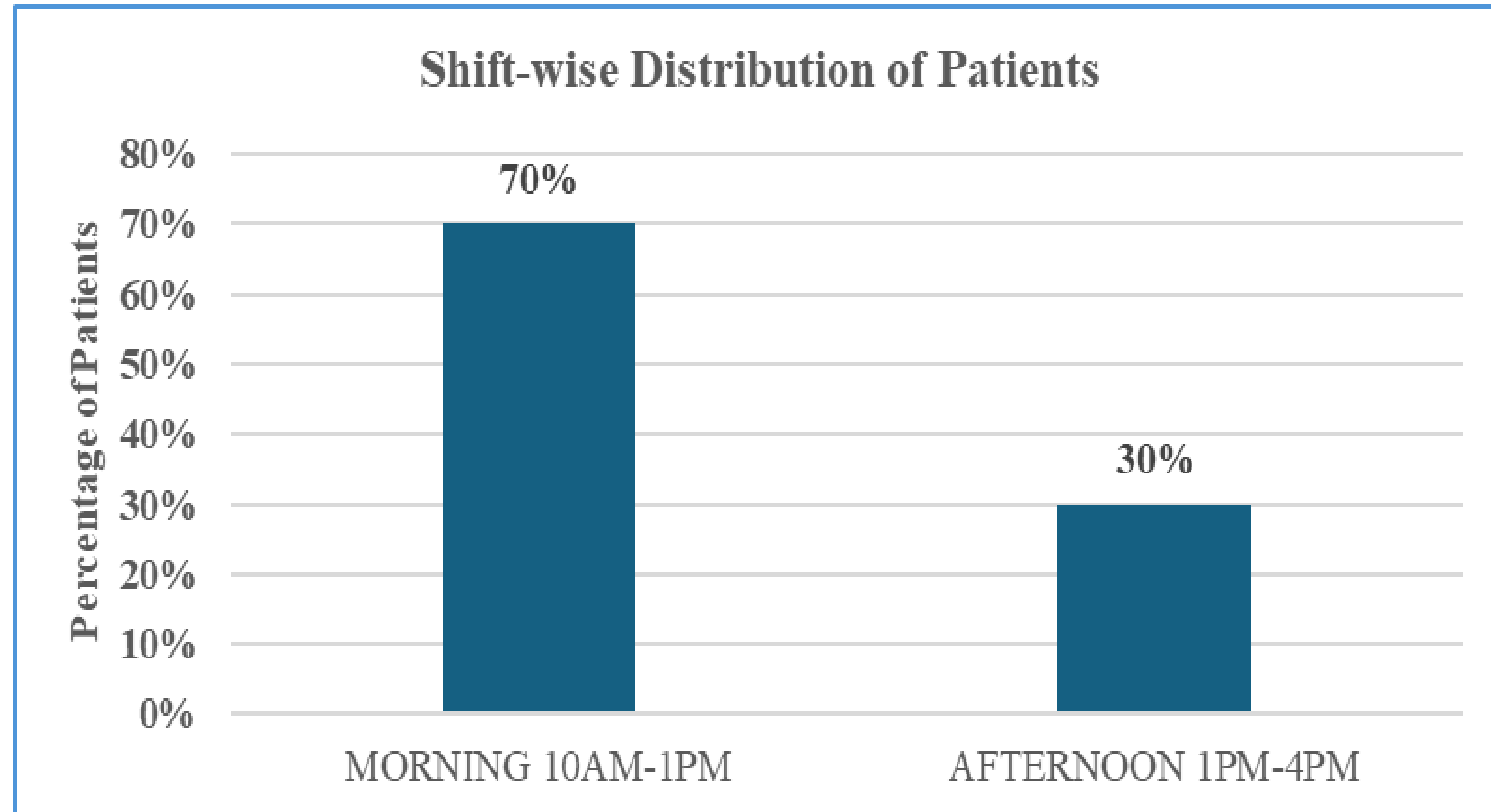
Peak hour identification through time-based grouping.

FLOW PROCESS OF OPD



FINDINGS

Shift-wise Distribution of Patients

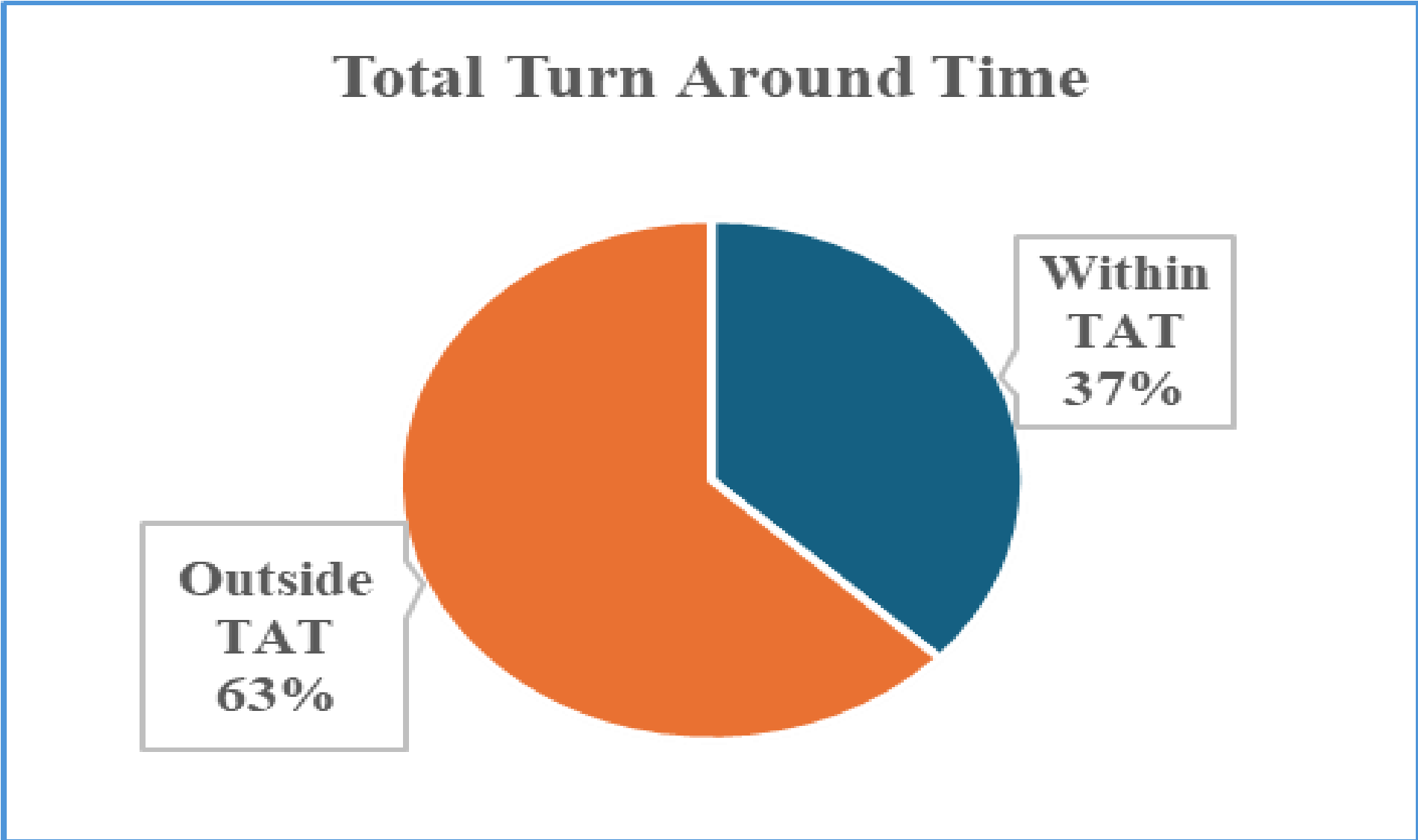


Total sample size:
N= 255

INTERPRETATIONS:

- The graph illustrates that 70% of patients visited during the morning shift (10 AM – 1 PM), while only 30% attended during the afternoon shift (1 PM – 4 PM).
- This indicates that patient flow is significantly higher in the morning, leading to potential operational pressure during this time.

Proportion of Patients Within and Outside Turnaround Time



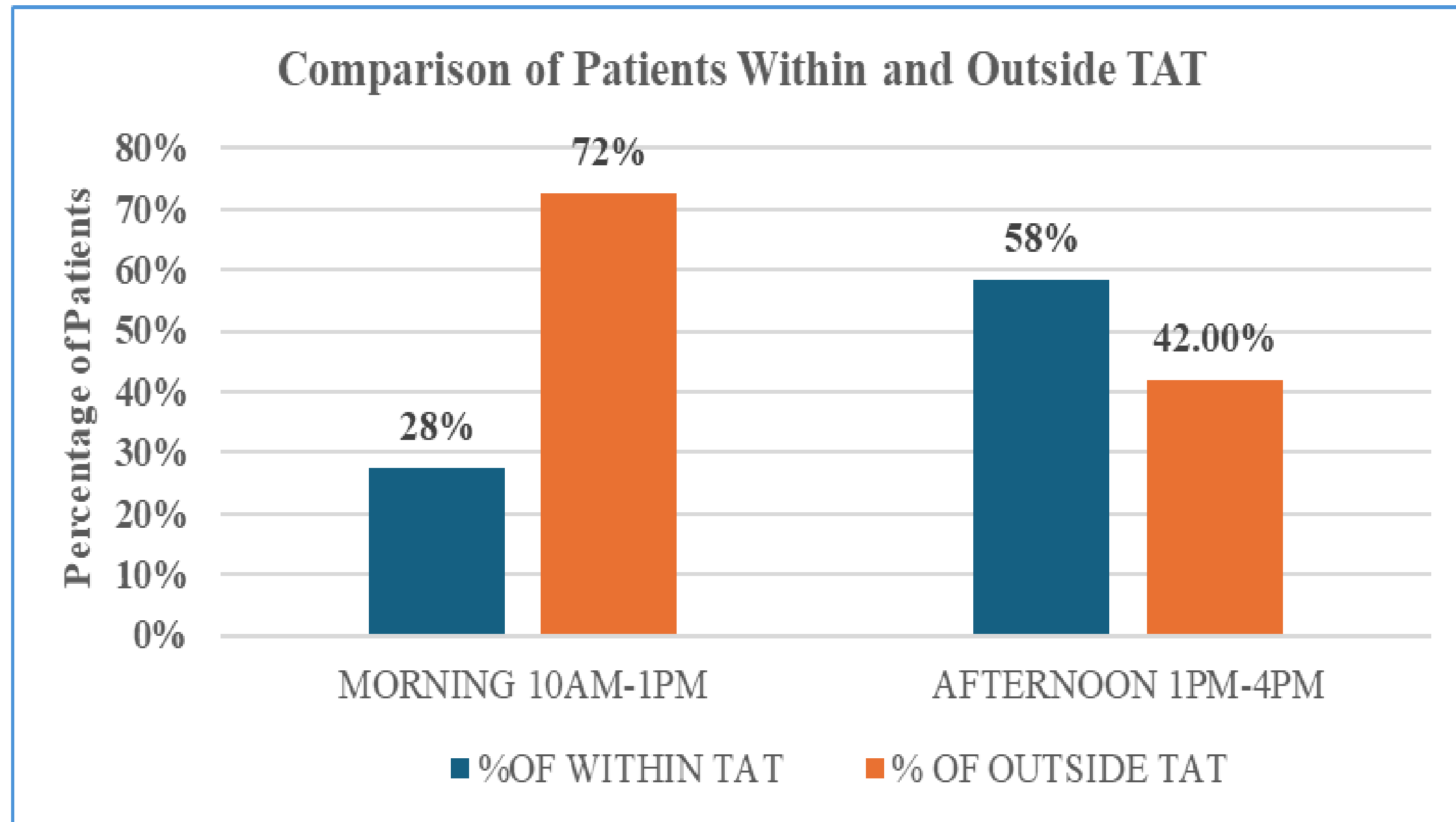
INTERPRETATIONS:

- The chart shows that only 37% of patients were billed within the defined Turnaround Time (TAT), while a significant 63% exceeded the expected limit.
- This highlights a major gap in operational efficiency, with the most of patients experiencing billing delays.

Measure	Time (minutes)
Mean	10:53

The mean turnaround time from token generation to billing counter arrival was found to be 10 minutes and 53 seconds.

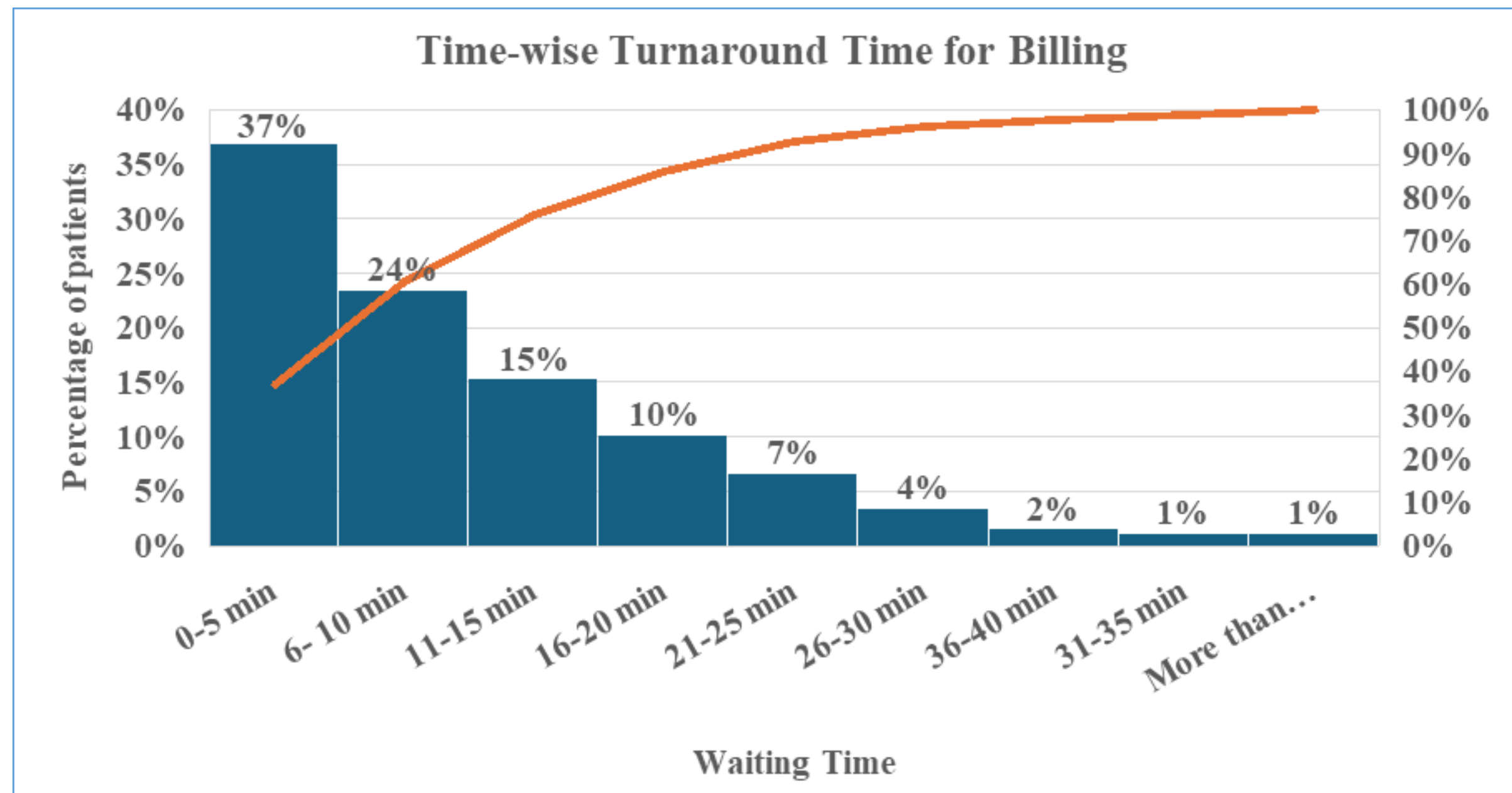
Comparison of Patients Within and Outside Turnaround Time (Shift-wise)



INTERPRETATIONS:

- During the morning shift (10 AM – 1 PM), only 28% of patients were billed within the defined TAT, while 72% experienced delays
- In contrast, the afternoon shift (1 PM – 4 PM) showed better performance, with 58% billed within TAT and 42% outside it.

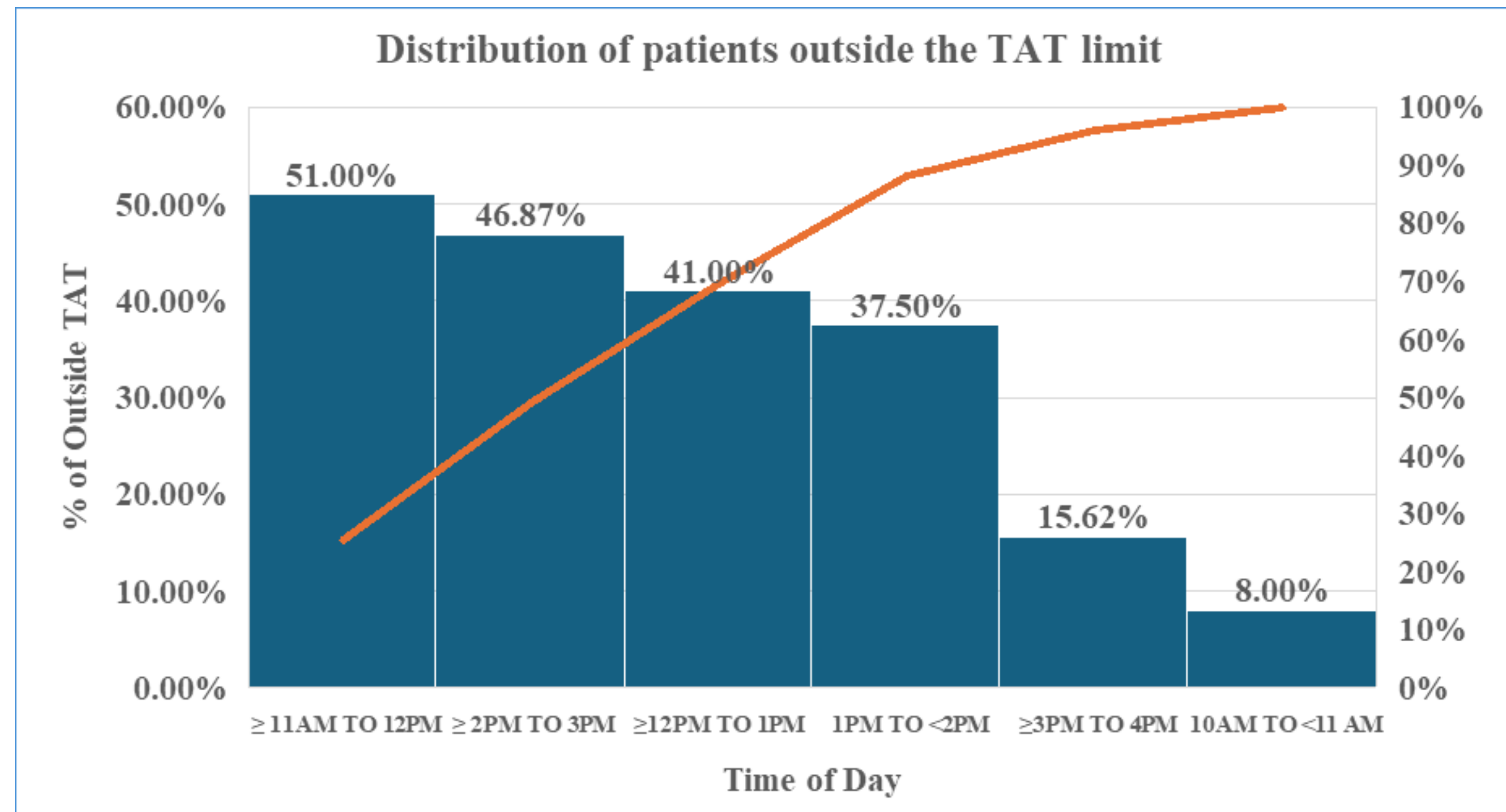
Time-wise Turnaround Time for Billing



INTERPRETATIONS:

- 37% of patients were billed within 0–5 minutes, showing strong early responsiveness.
- A total of 61% completed billing within the first 10 minutes, reflecting timely service for the majority.
- 85% of patients were billed within 20 minutes, indicating efficient service delivery in most cases.
- The remaining 15% experienced delays beyond 20 minutes, highlighting areas needing operational improvement.
- As per the 80/20 rule, improving billing efficiency within the first 20 minutes can significantly enhance overall performance and patient satisfaction.

Time-wise Distribution of Patients Outside the Turnaround Time Limit



INTERPRETATION

- The highest percentage of billing delays occurred between 11 AM to 12 PM (51%) and 2 PM to 3 PM (46.87%), indicating peak operational stress.
- 41% and 37.5% of patients were also billed outside the TAT during the 12 PM to 1 PM and 1 PM to 2 PM slots, respectively.
- Delay rates significantly dropped in the 3 PM to 4 PM (15.62%) and 10 AM to 11 AM (8%) periods, suggesting smoother workflow during early and late hours.

Key Factors Contributing to Billing Delays in OPD Services

Patient-Related Issues:

- Missing essential documents (e.g., Aadhaar, RGHS card).
- Incomplete or incorrect registration details.
- Missed token numbers due to lack of awareness or unclear announcements.

Administrative Inefficiencies:

- Staff unawareness of departmental billing protocols (e.g., physiotherapy).
- Manual data verification slowing down the billing process.
- Inadequate staffing during peak hours.

Technical Problems:

- Downtime or slow performance of the Hospital Information System (HIS).
- Malfunctioning or unreadable token display systems.
- Lack of regular system maintenance.

RECOMMENDATIONS

01

Introduce audio notification systems and enhance display visibility with larger fonts and a 'missed token' column to prevent confusion and reduce missed calls.

02

Install self-service kiosks or assign support staff to help patients, especially elderly or first-time visitors, complete registration accurately and quickly.

03

Create a dedicated billing counter for patients with appointments to minimize their waiting time and prevent unnecessary queuing.

04

Schedule routine maintenance of the Hospital Information System and display units to avoid downtime and ensure smooth billing operations.

05

Deploy additional billing staff during peak hours and high-footfall days, especially Monday, Tuesday, Saturday, and 11 AM to 1 PM, to manage crowd flow efficiently.

CONCLUSION

This study assessed the turnaround time (TAT) from token generation to billing counter arrival at Rukmani Birla Hospital, Jaipur. Only 37% of patients were billed within the defined TAT, while 63% experienced delays.

Delays were most prominent during the morning shift and peak hours (11 AM – 1 PM). Key causes included missed tokens, incomplete documentation, manual registration errors, limited staff, HIS issues, and lack of effective communication systems.

These gaps highlight the need for process improvements, staff training, and technology upgrades to enhance billing efficiency and patient satisfaction.

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THANK YOU