

DISSERTATION REPORT

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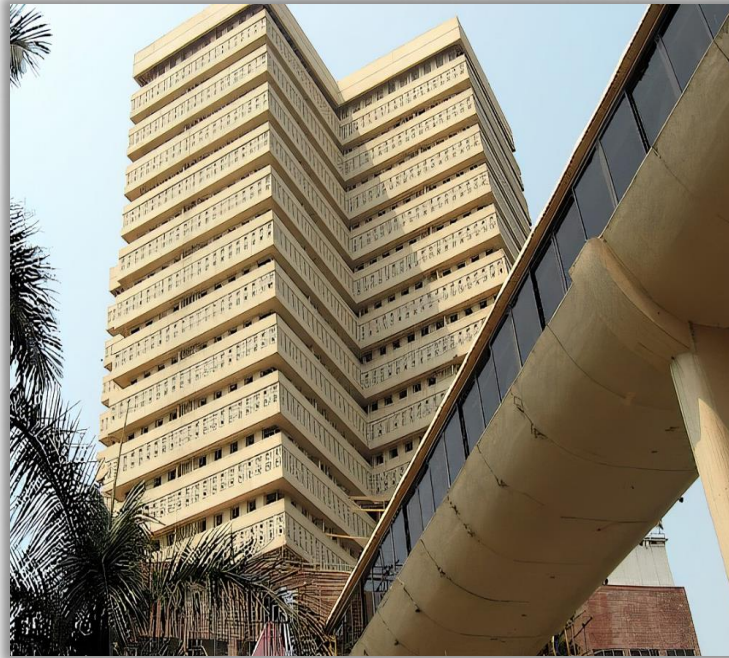
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DISSERTATION AT

**P. D. HINDUJA HOSPITAL
& MEDICAL RESEARCH CENTRE**

Mumbai

(21st March to 18th June, 2022)



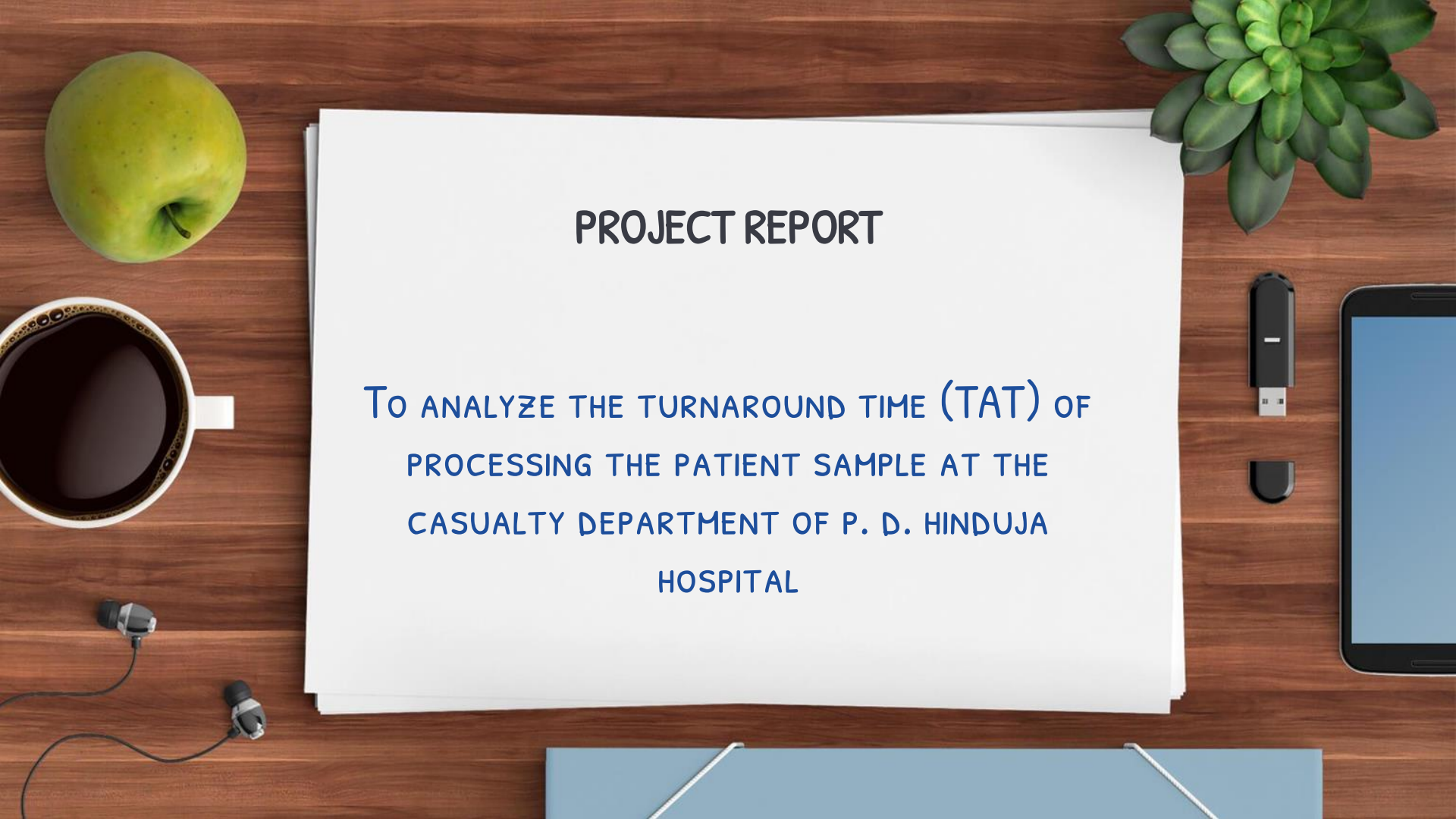


Presentation Overview

☐ Project Report

- Problem Statement
- Aim
- Objective
- Methodology
- Results & Analysis
- Recommendations
- Conclusion

☐ References

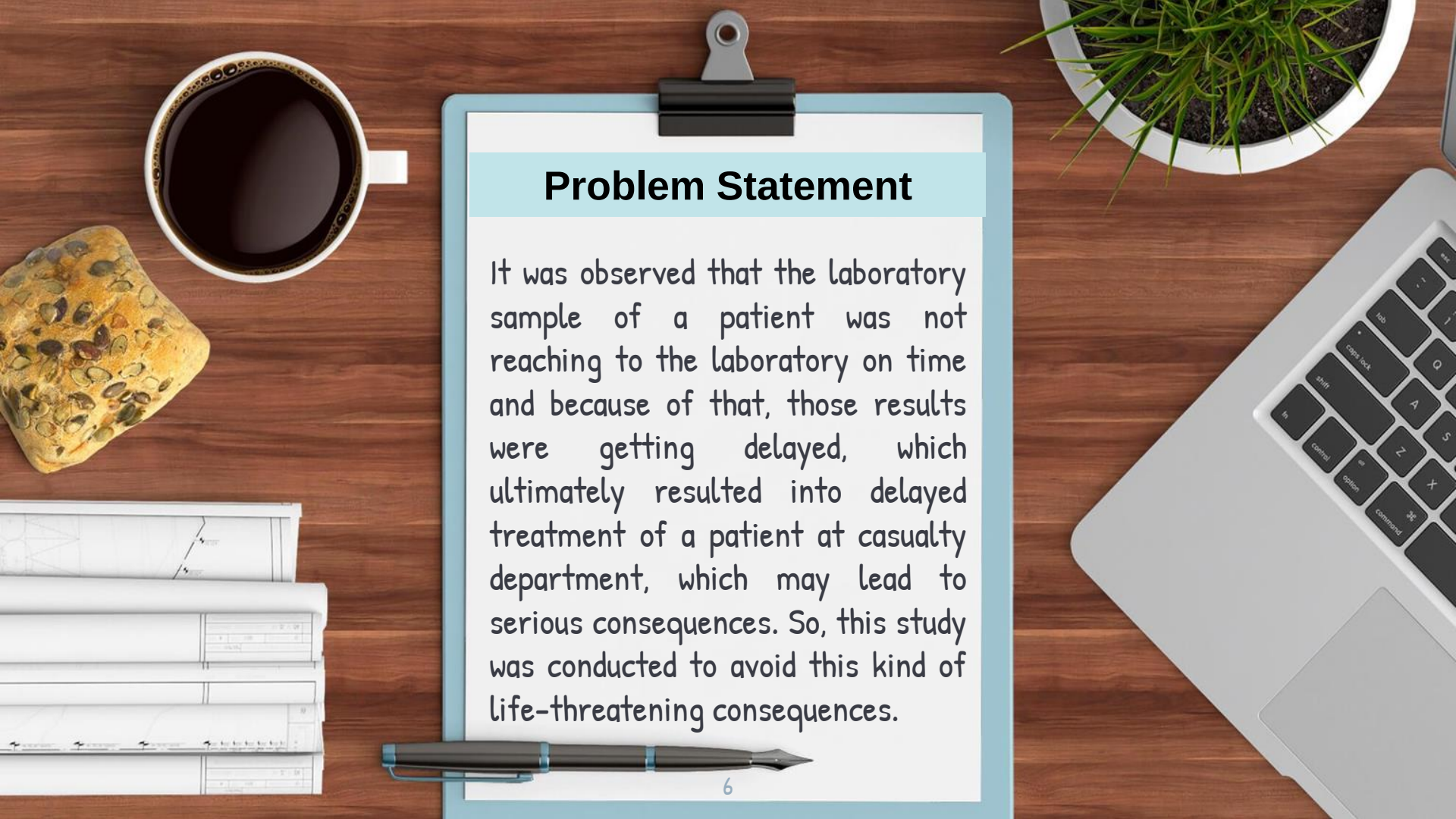


PROJECT REPORT

TO ANALYZE THE TURNAROUND TIME (TAT) OF
PROCESSING THE PATIENT SAMPLE AT THE
CASUALTY DEPARTMENT OF P. D. HINDUJA
HOSPITAL

INTRODUCTION

- ❑ Emergency Departments (ED) are designed to be for emergency patients requiring immediate and often lifesaving treatment. They were not intended to handle high numbers of walk-in patients.
- ❑ So, it is no surprise then that many ED patients complain about their care. Chief among the reasons for long waiting time is laboratory turnaround time (TATs). Laboratory results have a cascading effect on patient throughput.
- ❑ The reality is that the quality of patient care and a hospital's financials can be significantly affected by laboratory test processes from the collection of specimens and their travel time to reporting. In addition to these process flow issues; surveys have shown that slow laboratory TATs result in negative perceptions of a healthcare facility by ED physicians. Therefore, TAT is a very important tool by which a laboratory is assessed.



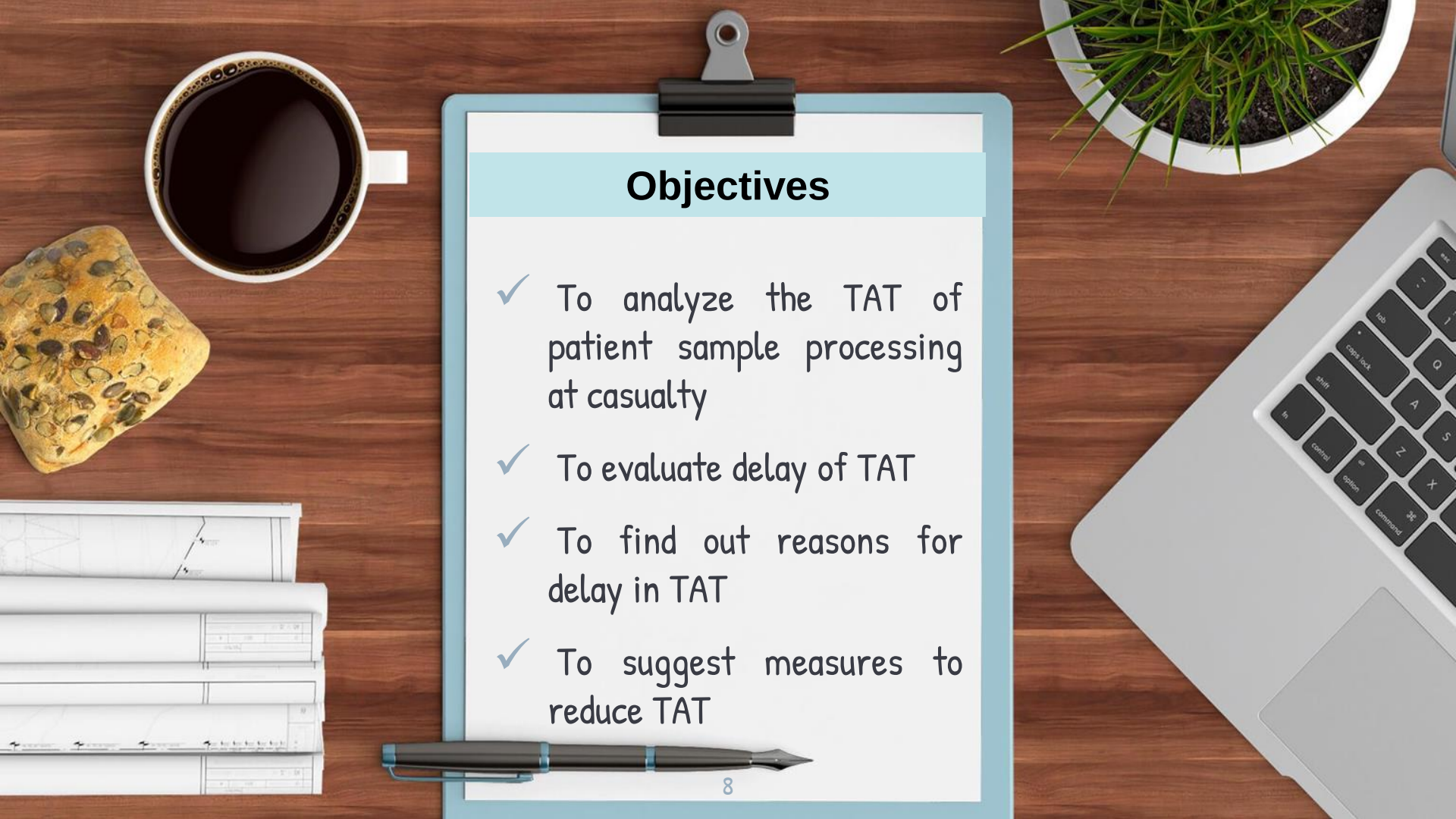
Problem Statement

It was observed that the laboratory sample of a patient was not reaching to the laboratory on time and because of that, those results were getting delayed, which ultimately resulted into delayed treatment of a patient at casualty department, which may lead to serious consequences. So, this study was conducted to avoid this kind of life-threatening consequences.



Aim

To Study the TAT of Lab
samples processed from
Accident & Emergency
Department



Objectives

- ✓ To analyze the TAT of patient sample processing at casualty
- ✓ To evaluate delay of TAT
- ✓ To find out reasons for delay in TAT
- ✓ To suggest measures to reduce TAT

METHODOLOGY

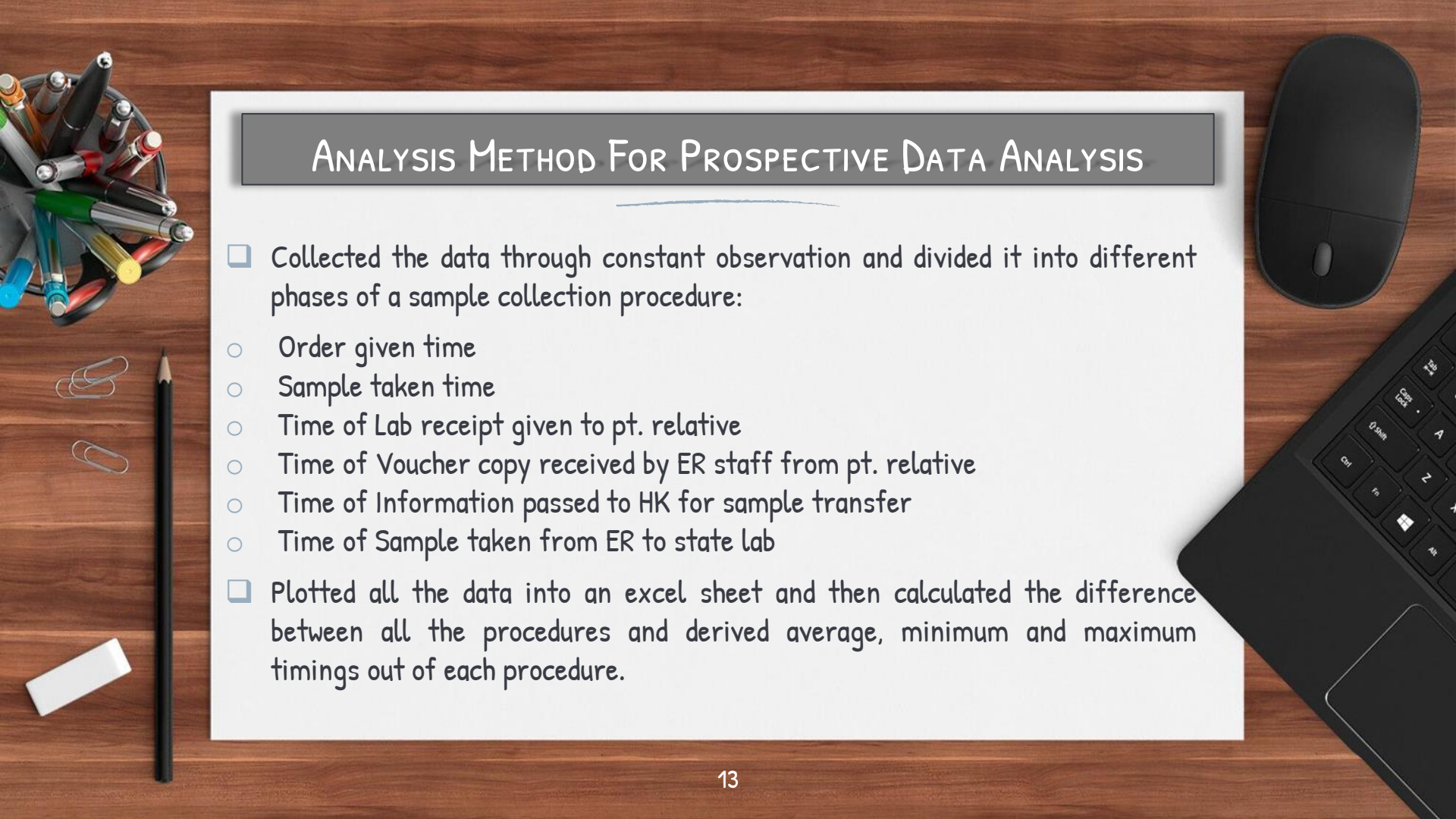
STUDY DESIGN	Multiphasic Observational study
SETTING	P. D. Hinduja Hospital- Accident & Emergency Department
STUDY POPULATION	Patients visiting A&E department for availing medical services
SAMPLE SIZE	160 Samples (30- Prospective data, 130- Retrospective data)
SAMPLING TECHNIQUE	Convenience Sampling Technique
MODE OF DATA COLLECTION	Observation Method (Primary data) Quantitative Secondary data collection method (Secondary data)
DURATION OF STUDY	22nd March, 2022 to 30th April, 2022 (40 days)
STUDY TOOLS	Pareto chart, Fishbone diagram (Cause & Effect diagram)





ANALYSIS METHOD FOR RETROSPECTIVE DATA

- ☐ Gathered the data from the register maintained in the casualty and then analyzed the data in excel sheet and calculated the difference between sent time and receive time of all the samples collected within the timeline, after that calculated average, minimum and maximum time difference for sample transport time, then calculated the compliance rate based on defined timeframe, which is 0:15 min.
- ☐ And lastly, calculated the frequency of lab tests being ordered in the casualty on a daily basis.

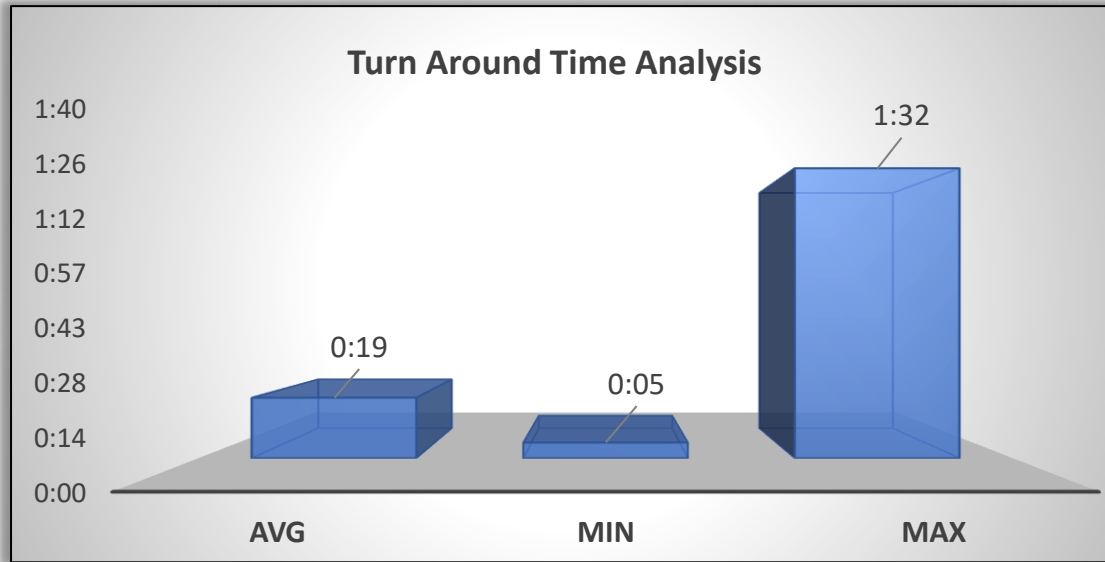


ANALYSIS METHOD FOR PROSPECTIVE DATA ANALYSIS

- ❑ Collected the data through constant observation and divided it into different phases of a sample collection procedure:
 - Order given time
 - Sample taken time
 - Time of Lab receipt given to pt. relative
 - Time of Voucher copy received by ER staff from pt. relative
 - Time of Information passed to HK for sample transfer
 - Time of Sample taken from ER to state lab
- ❑ Plotted all the data into an excel sheet and then calculated the difference between all the procedures and derived average, minimum and maximum timings out of each procedure.

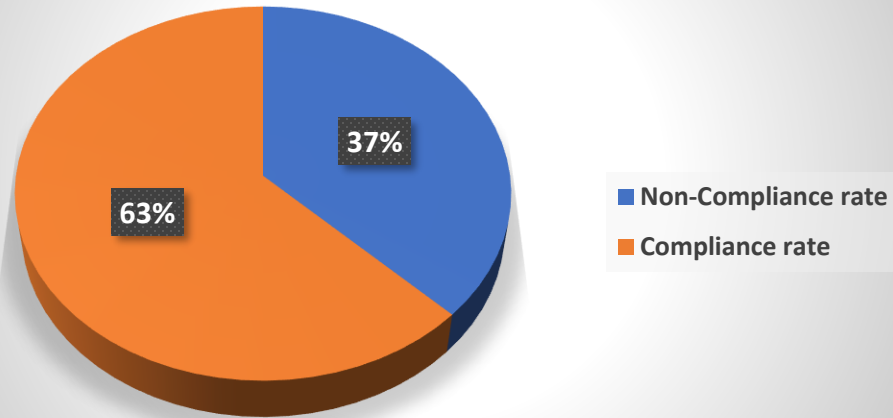
RESULTS

Retrospective Data

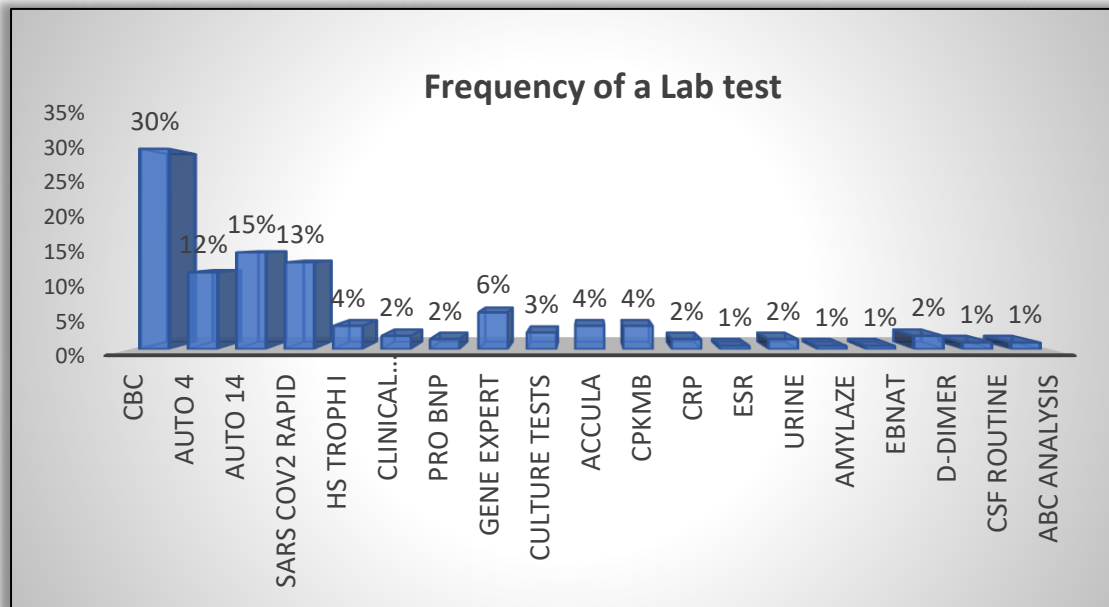


RESULTS

Compliance Analysis



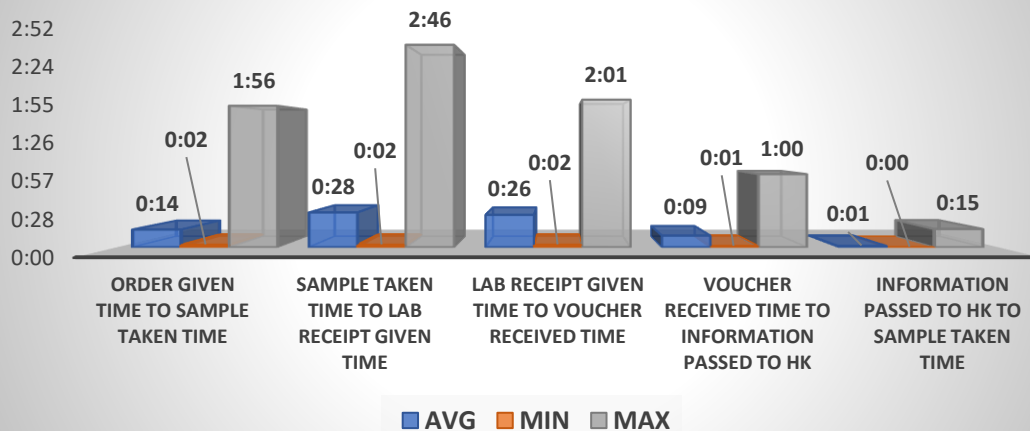
RESULTS



RESULTS

Prospective Data

TAT analysis of Lab sample processed from ER



Fishbone Diagram

Order Processing

Queue Waiting time at billing counter
 Delay in billing intimation by the relative
 Billing system is slow
 PRD approval pending
 Patient's Financial constraints
 Order Attended Late
 Patient's indecisiveness
 Prescription Given late to patient
 Billing Printer Not Working
 EDC machine Not working
 Doctors' indecisiveness
 Wrong Bradma Printed
 Bradma Not available
 Patient file misplaced

Sample Drawing

Patient not co-operative
 Sample Drawn Late
 Cannot locate the vein
 Patient pricked Incorrectly
 PRD approval pending
 Order Attended Late
 Sample damaged
 Billing Printer Not Working
 Testing error or recollection
 Needle/Syringe/VAC /Culture Bottle Not Available
 Inconclusive Accula Test

Delay in Emergency Patient Sample Processing

Sample Dispatch

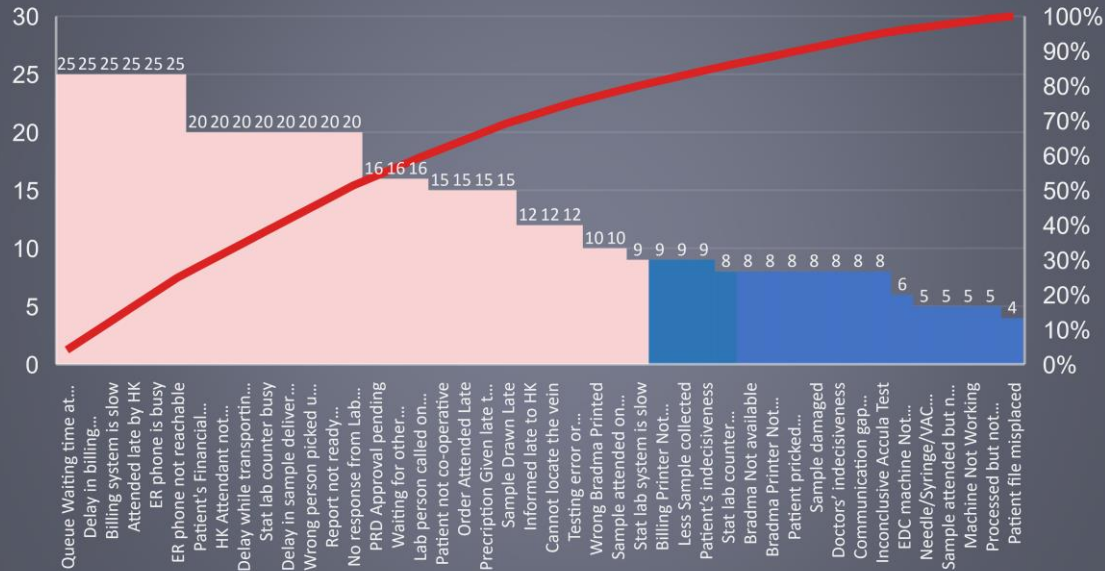
Delay in sample delivery from stat lab
 Communication gap among HK
 Stat lab counter busy
 Waiting for other Emergency sample
 Informed late to HK
 Delay while transporting to stat lab
 Sample attended on wrong patient in the
 HK Attendant not available
 Stat lab system is slow
 Attended late by HK
 Stat lab counter unattended

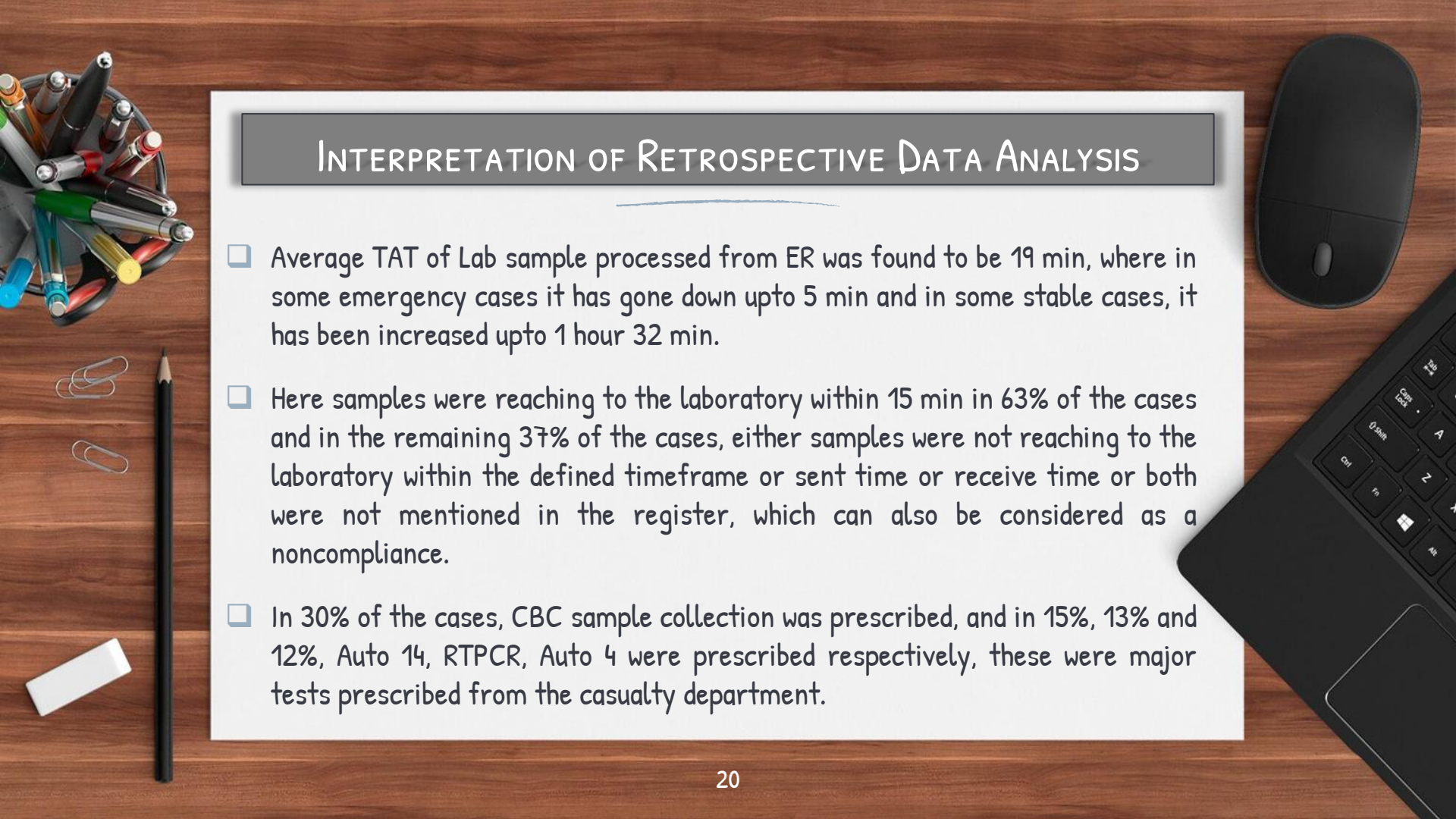
Sample Processing & Reporting

ER phone is busy
 Wrong person picked up the call
 ER phone not reachable
 Report not ready (processing)
 No response from Lab extension
 Lab person called on wrong extension number
 Sample attended but not processed
 Machine Not Working
 Processed but not reported

Pareto Chart

Delay in Emergency Patient Sample processing



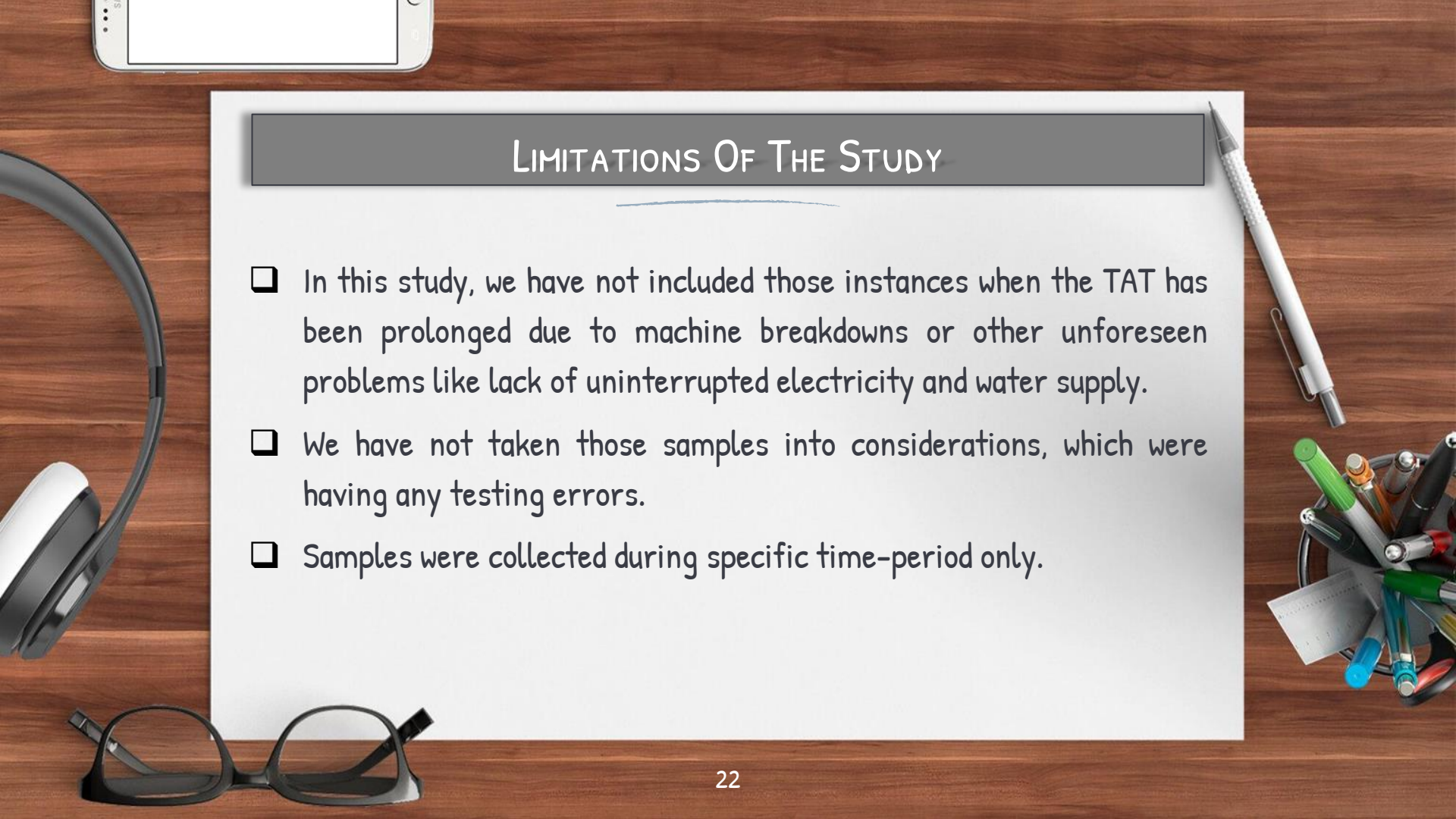


INTERPRETATION OF RETROSPECTIVE DATA ANALYSIS

- ❑ Average TAT of Lab sample processed from ER was found to be 19 min, where in some emergency cases it has gone down upto 5 min and in some stable cases, it has been increased upto 1 hour 32 min.
- ❑ Here samples were reaching to the laboratory within 15 min in 63% of the cases and in the remaining 37% of the cases, either samples were not reaching to the laboratory within the defined timeframe or sent time or receive time or both were not mentioned in the register, which can also be considered as a noncompliance.
- ❑ In 30% of the cases, CBC sample collection was prescribed, and in 15%, 13% and 12%, Auto 14, RTPCR, Auto 4 were prescribed respectively, these were major tests prescribed from the casualty department.

INTERPRETATION OF PROSPECTIVE DATA ANALYSIS

- ☐ Average TAT between order given time to sample taken time was found to be 14 min, for sample taken time to lab receipt given time it has found to be 28 min, for Lab receipt given time to voucher received time it has found to be 26 min, for Voucher received time to information passed to HK it has found to be 9 min and lastly for Information passed to HK to sample taken time it has found to be 1 min.
- ☐ Various reasons of delay in emergency patient sample processing were found while collecting the data, those were categorized into 4 phases:
 - ☐ Order Processing
 - ☐ Sample Drawing
 - ☐ Sample Dispatch
 - ☐ Sample Processing and Reporting
- ☐ Reasons of delay are shown in the fishbone diagram.



LIMITATIONS OF THE STUDY

- ❑ In this study, we have not included those instances when the TAT has been prolonged due to machine breakdowns or other unforeseen problems like lack of uninterrupted electricity and water supply.
- ❑ We have not taken those samples into considerations, which were having any testing errors.
- ❑ Samples were collected during specific time-period only.

RECOMMENDATIONS FOR IMPROVEMENT

Reasons of delay	Recommendations
Long queue waiting time at billing counter/ Billing system is slow	To avoid the long queuing time for patients/relatives, we can start self-payment machine to make the process easier and quicker, for which we can align the lab test name with the name in self-payment machine to avoid the confusion for the patients.
ER phone is busy/not reachable	We can allot one dedicated intercom for lab queries.
Testing error or recollection Wrong Bradma Printed Sample attended on wrong patient in the system	Staff training on regular interval
Cannot locate the vein	For those difficult patients, we can choose alternate limb or use Infrared Vein Finder, which can be a lifesaver for them.
Prescription given late to patient Sample Drawn Late Informed late to HK	We can implement Standalone Emergency management system
HK Attendant not available (busy attending patients)	We can implement pneumatic tube system. We can also develop one automated system, which will notify at laboratory once the sample is dispatched from the emergency. And likewise, once sample is received by lab, it will notify at emergency. And it will also send/update reports directly at emergency through the system once testing procedure is completed.

Conclusion

- Hospitals across the India are continuing to experience pressure to treat more patients with fewer EDs and fewer hospital beds. The ED has more complex workflows compared to other hospital departments and crowding in the ED based on the severity of the disease can affect patients differently.
- It has also been observed that the reduction of TAT will allow the ED to accept more patients, thus highlighting the importance and benefit of developing processes/technologies with the potential to drive further efficiencies and reduce laboratory TAT at emergency department.
- Implementation of Standalone emergency management system can work as an effective output to reduce the TAT of laboratory samples.

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