Summer Internship Report

At

NH MMI NARAYNA SUPER SPECIALITY HOSPITAL

(April 22nd to June 21st, 2024)

A Report

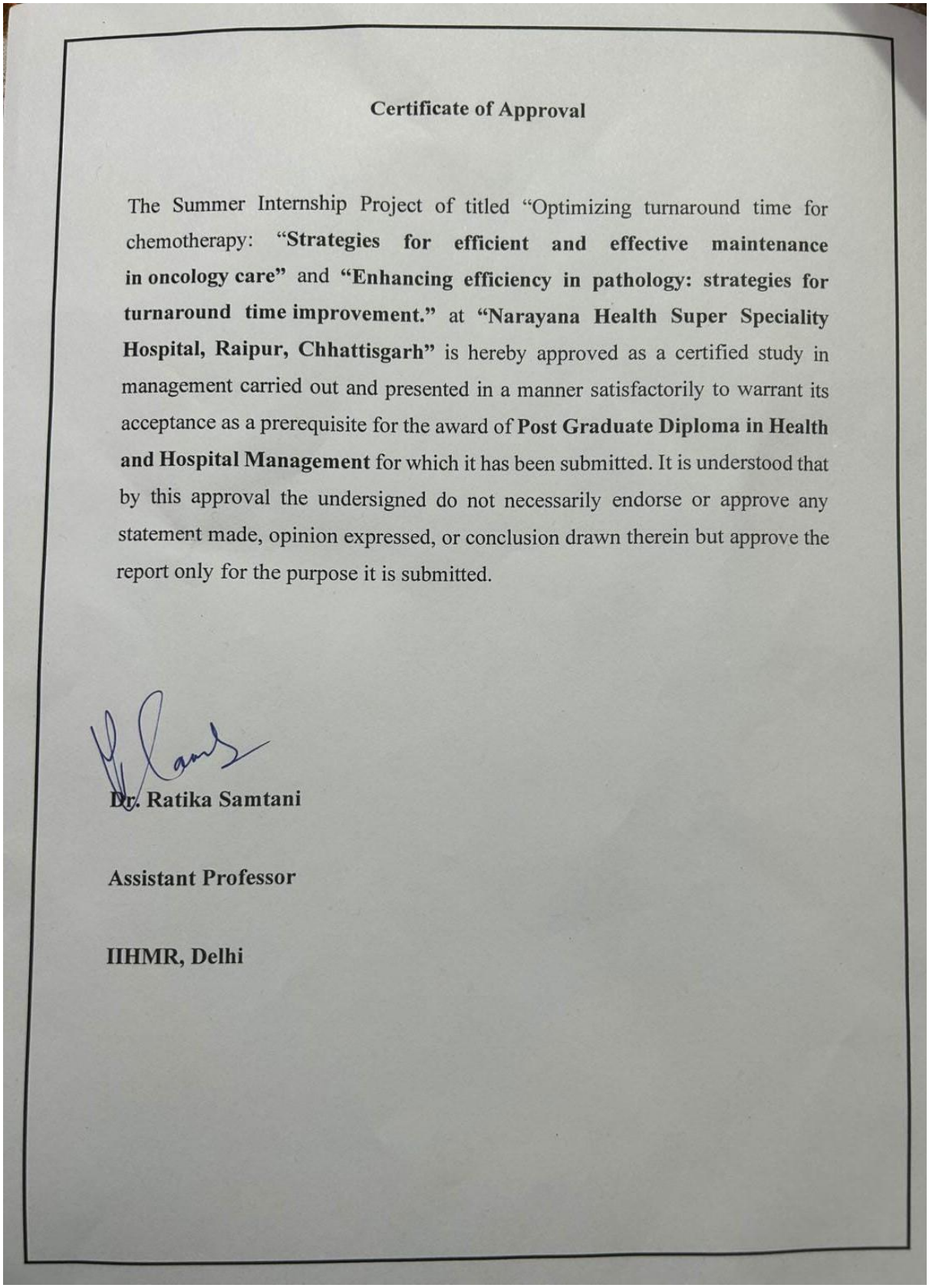
By

MS. MOINA RAHMAN

PGDM (Hospital and Health Management)

2023-2025

CERTIFICATE OF APPROVAL



Certificate of Approval

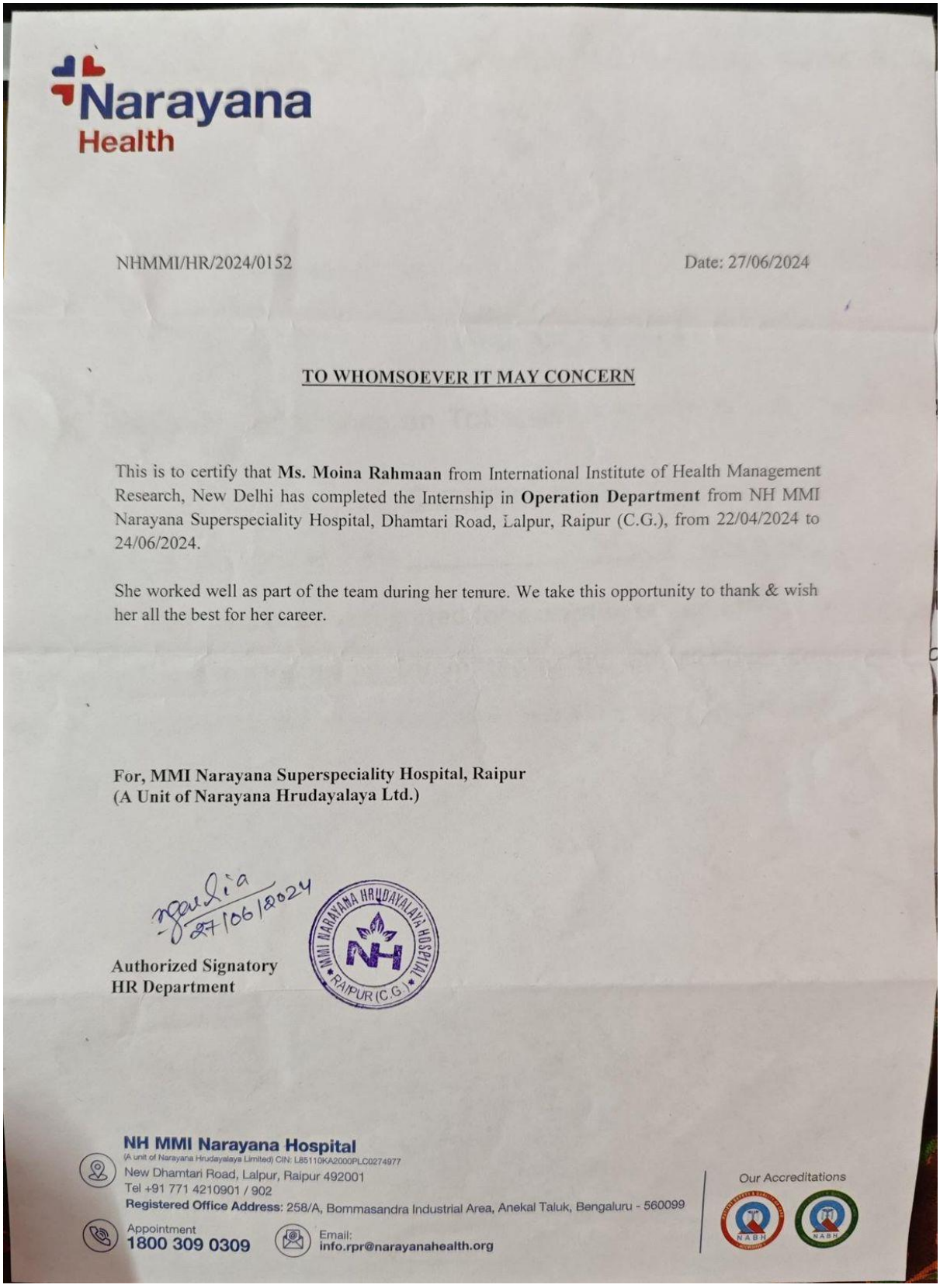
The Summer Internship Project of titled "Optimizing turnaround time for chemotherapy: **"Strategies for efficient and effective maintenance in oncology care"** and **"Enhancing efficiency in pathology: strategies for turnaround time improvement."** at **"Narayana Health Super Speciality Hospital, Raipur, Chhattisgarh"** 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. Ratika Samtani

Assistant Professor

IIHMR, Delhi

CERTIFICATE OF COMPLETION



Narayana Health

NHMMI/HR/2024/0152 Date: 27/06/2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms. Moina Rahmaan** from International Institute of Health Management Research, New Delhi has completed the Internship in **Operation Department** from NH MMI Narayana Superspeciality Hospital, Dhamtari Road, Lalpur, Raipur (C.G.), from 22/04/2024 to 24/06/2024.

She worked well as part of the team during her tenure. We take this opportunity to thank & wish her all the best for her career.

For, MMI Narayana Superspeciality Hospital, Raipur
(A Unit of Narayana Hrudayalaya Ltd.)

27/06/2024

Authorized Signatory
HR Department

MMI NARAYANA HRUDAYALAYA HOSPITAL RAIPUR (C.G.)

NH MMI Narayana Hospital
(A unit of Narayana Hrudayalaya Limited) CIN: L85110KA2000PLC027497
New Dhamtari Road, Lalpur, Raipur 492001
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Registered Office Address: 258/A, Bommasandra Industrial Area, Anekal Taluk, Bengaluru - 560099

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Our Accreditations

FEEDBACK FORM

FEEDBACK FORM

(IIHMR MENTOR)

Name of the Student: MOINA RAHMAN

Summer Internship Institution: Narayana MMI Superspeciality Hospital, Raipur

Area of Summer Internship: In-patient department Pathology

Attendance: 100%

Objectives met: Identified bottlenecks,
Improve process mapping
Planned effective strategies

Deliverables: Reduced Turn around time (TAT)
Patient satisfaction improved

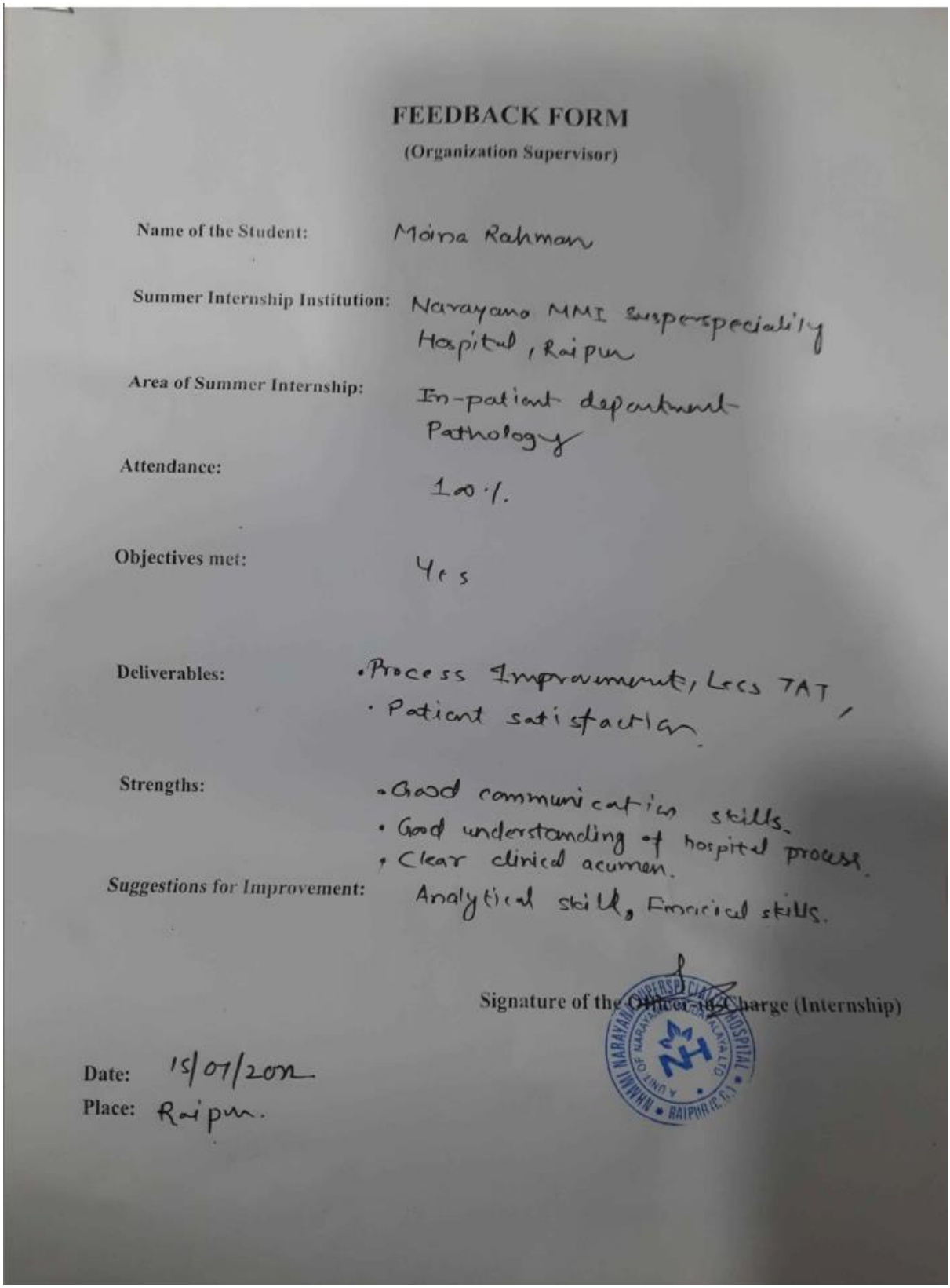
Strengths: Good communication skills
Good understanding of hospital process
Clear clinical acumen

Suggestions for Improvement: Financial skill can be worked upon.

Signature of the Officer-in-Charge (Internship)

Date: 10th December, 2024
Place: New Delhi

FEEDBACK FORM(ORGANISATION)



FEEDBACK FORM

(Organization Supervisor)

Name of the Student: Moina Rahman

Summer Internship Institution: Narayana MMI Superspeciality Hospital, Raipur

Area of Summer Internship: In-patient department-Pathology

Attendance: 100%

Objectives met: Yes

Deliverables:
- Process Improvement, Less TAT,
- Patient satisfaction.

Strengths:
- Good communication skills.
- Good understanding of hospital process.
- Clear clinical acumen.

Suggestions for Improvement: Analytical skill, Empirical skills.

Signature of the Officer-in-Charge (Internship)

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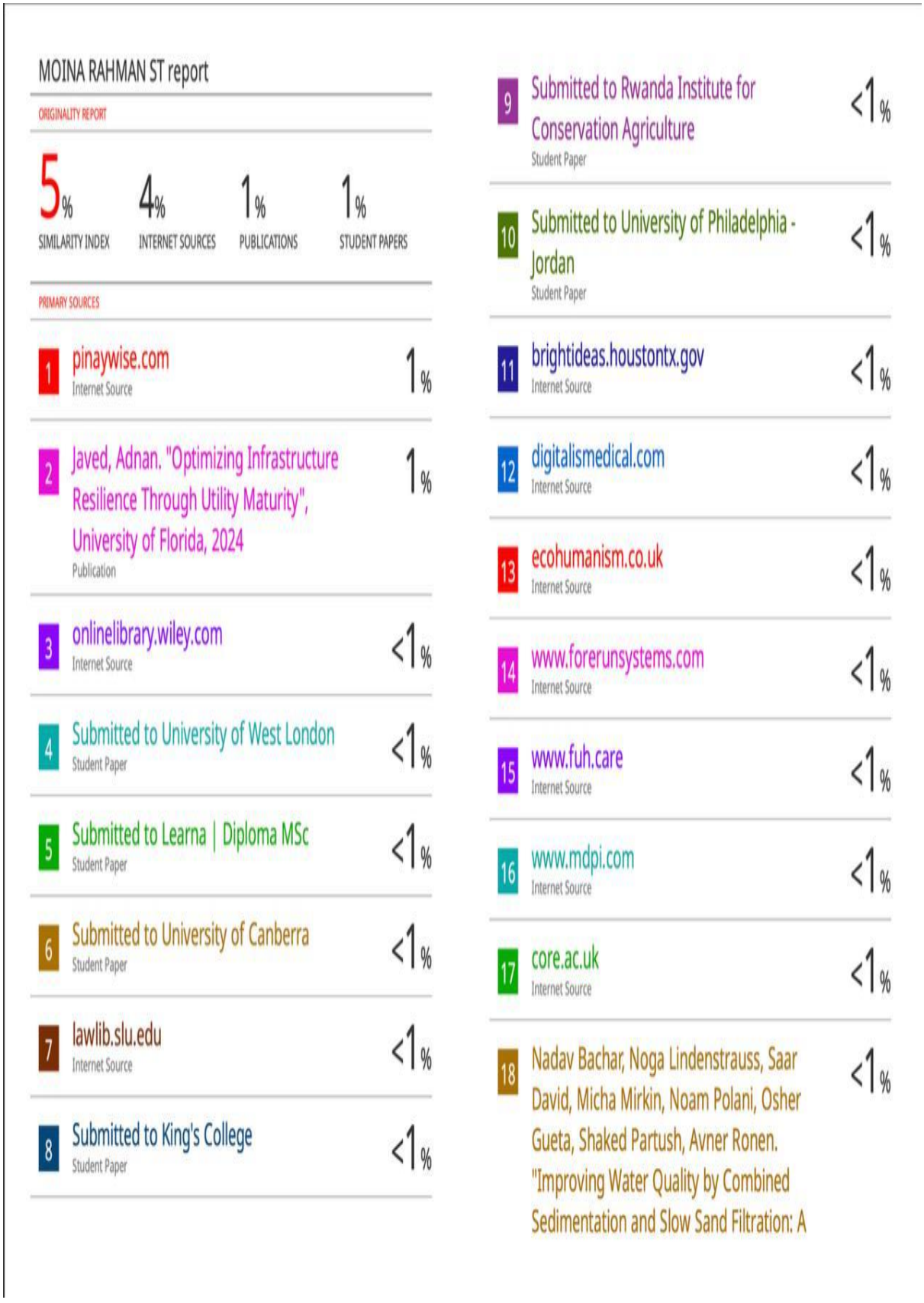
Date: 15/07/2022

Place: Raipur.

PLAGIARISM REPORT



MOINA RAHMAN ST report

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International Institute of Health Management Research, New Delhi

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ACKNOWLEDGEMENT

I would like to extend my deepest gratitude to NH MMI Narayana super specialty hospital for their invaluable support and contribution in my research.

Special thanks to Mr Dharma Rao whose expertise, guidance and encouragement were instrumental in the successful completion of this study. Your insights and feedback were crucial in shaping the direction of my research

I am profoundly grateful to everyone for their assistance and cooperation during the data collection process. Your professionalism and dedication ensured the smooth execution of my research activities.

I would like to thanks the administrative staff at NH MMI Narayana Super Speciality Hospital for facilitating the necessary approval and providing access to the resources needed for my study. Your efficient handling of logistical arrangement greatly contributed to the progress of my research

Lastly, I extend my heartfelt thanks to all the patients who participated in this study. Your willingness to contribute to this research is deeply appreciated and has been fundamental access to its success.

Thank you all for your unwavering support and contribution to this project.

ABOUT THE ORGANIZATION

(NH MMI NARAYANA SUPERSPECIALITY HOSPITAL LALPUR, RAIPUR, C.G.)

Nh mmi narayana super speciality hospital is a part of the narayana health group, a prominent healthcare provider in india.

Its mission is to deliver high quality, affordable health care services to the community

Its vision is to become a preferred health care provider by offering comprehensive, companssionate and ethical medical services

Infrastructure: state of the art facilities with advanced medical technology

Its has various specialities which include:

- Cardiology and cardial surgery
- Neurology and neuro surgery
- Orthopedics and joint replacement
- Oncology
- Nephrology and urology
- Gastroenterology
- Pulmonology
- Critical care and emergency service

The nh mmi narayana super speciality hospital at raipur, chattisgarh , india has approximately 232 beds. This capacity allows the hospital to provide a wide range of medical services and accommodate pateints with various heatl care need

SCOPE OF SERVICES

NH MMI Narayana Super speciality Hospital offers a comprehensive range of medical services across multiple specialties, ensuring high-quality healthcare for patients. Here is an overview of the services provided:

1. Cardiology and Cardiac Surgery which include services:

- Diagnostic and interventional cardiology
- Electrophysiology studies
- Cardiac catheterization
- Angioplasty and stent placement
- Coronary artery bypass grafting (CABG)
- Valve repair and replacement
- Heart failure management

2. Neurology and Neurosurgery which include services:

- Treatment for stroke and cerebrovascular diseases
- Management of epilepsy and seizure disorders
- Neurocritical care
- Brain and spine surgeries
- Treatment for neurodegenerative diseases
- Management of brain tumours

3. Orthopaedics and Joint Replacement*
- Total knee and hip replacement
- Arthroscopy and sports medicine
- Treatment for fractures and trauma
- Spinal surgeries
- Paediatric orthopaedics
- Bone and joint infections

4. Oncology which include services:
- Medical oncology (chemotherapy, immunotherapy)
- Surgical oncology
- Radiation oncology
- Palliative care
- Haematology (blood disorders and cancers)

5. Nephrology and Urology which include services:
- Dialysis (haemodialysis and peritoneal dialysis)
- Kidney transplantation
- Treatment for kidney stones
- Management of chronic kidney disease (CKD)
- Urological surgeries
- Prostate treatment

6. Gastroenterology which include services:
- Endoscopy and colonoscopy
- Treatment for liver diseases
- Management of inflammatory bowel disease (IBD)
- Hepatology
- Gastrointestinal surgeries
- Treatment for pancreatitis

7. Pulmonology which include services:
- Treatment for asthma and COPD
- Pulmonary function tests (PFTs)
- Bronchoscopy
- Management of sleep disorders
- Treatment for lung infections
- Thoracic surgery

8. Critical Care and Emergency Services which include services:
- 24/7 emergency care
- Intensive care units (ICUs)
- High dependency units (HDUs)
- Trauma care
- Advanced life support
- Poison management

9. Other Specialties which include services:
- General surgery
- Plastic and reconstructive surgery
- ENT (ear, nose, and throat) services
- Ophthalmology
- Dermatology
- Paediatric services

10. Diagnostic and Support Services which include services:
- Laboratory services (pathology, microbiology, biochemistry)
- Radiology and imaging (X-ray, MRI, CT scan, ultrasound)
- Blood bank
- Physiotherapy and rehabilitation
- Pharmacy services

CONCLUSION

NH MMI Narayana Super speciality Hospital provides a wide range of specialized medical services, ensuring comprehensive care for patients. With advanced technology and a team of skilled healthcare professionals, the hospital aims to deliver quality healthcare across various medical disciplines.

PROJECT REPORT 01

PROJECT REPORT ON THE IMPROVEMENT ON CHEMOTHERAPY TAT AND IMPROVING THE QUALITY OF CARE

TABLE OF CONTENT

TITLE OF THE STUDY

Optimizing turnaround time for chemotherapy: “Strategies for efficient and effective maintenance in oncology care”

BACKGROUND AND INTRODUCTION

The administration of the chemotherapy is an important element in cancer treatment which is aimed at reducing tumour size, alleviating symptoms, and prolonging patient survival. The timely delivery of chemotherapy is very crucial for its efficiency, as delays can negatively impact treatment outcomes, patient survival rate and overall quality of care. Turnaround time in chemotherapy refers to the period from the decision to treat to the actual administration of chemotherapy agents. This process involves multiple steps, including patient assessment, drug preparation, laboratory testing and logistical coordination.

Efficient management of chemotherapy TAT requires the collaboration of various stakeholders, including oncologist, pharmacist, nurses and administrative staff. Despite advance in oncology care, prolonged TATs are still an issue leading to treatment delay, patient dissatisfaction, and increased health care cost.
At NH MMI NARAYANA SUPER SPECIALITY HOSPITAL, it ensures the prompt and effective delivery of chemotherapy is a top priority. The hospital is committed to enhancing patient care continuous improvement of clinical process and workflows. The internship project aims to support these efforts by focusing on optimizing chemotherapy TAT.

Introduction

Chemotherapy remains a cornerstone in the treatment of various cancers, offering significant therapeutic benefits. However, the effectiveness of chemotherapy is closely linked to its timely administration, making turnaround time (TAT) is an important metric in oncology care. Prolonged TAT can result from a variety of factors, including inefficiencies in the workflow, staffing shortages, and logistical challenges. These delays can compromise treatment efficacy, patient outcomes, and the overall quality of care provided.

The primary objective of this internship project at NH MMI Narayana Super Speciality Hospital is to explore strategies for optimizing chemotherapy TAT which will ensure that the patients receive their treatment as promptly and efficiently as possible. By examining the current processes involved in chemotherapy administration, identifying bottlenecks, and implementing targeted interventions, this project aims to develop a framework for reducing TAT in the hospital's oncology care.

The project will involve a comprehensive analysis of the factors influencing chemotherapy TAT, the implementation of evidence-based strategies, and the evaluation of their impact on patient outcomes, healthcare resource utilization, and overall satisfaction among patients and healthcare providers. Through this research, the project seeks to contribute to the hospital's ongoing efforts to enhance the efficiency and effectiveness of its cancer treatment protocols. Ultimately, the goal is to ensure that patients at NH MMI Narayana Super Speciality Hospital receive timely and high-quality care, thereby improving their chances of successful treatment and quality of life.

RATIONALE OF THE STUDY

Efficient and timely administration of chemotherapy is critical for the successful treatment of cancer patients. At NH MMI Narayana Super Speciality Hospital, maintaining high standards of oncology care is a priority, and optimizing chemotherapy turnaround time (TAT) is essential to achieve this goal. The rationale for this internship project is founded on several key considerations:

1. Impact on Patient Outcomes: Timely administration of chemotherapy is closely linked to better patient outcomes, including improved survival rates and enhanced quality of life. Delays in chemotherapy can lead to suboptimal treatment responses and disease progression. By optimizing TAT, the hospital can improve the effectiveness of cancer treatments and contribute to better health outcomes for patients.

2. Patient Satisfaction and Experience: Extended waiting times for chemotherapy can lead to increased patient anxiety, dissatisfaction, and decreased trust in the healthcare system. By reducing TAT, the hospital can enhance the patient experience, leading to higher levels of satisfaction and improved patient-provider relationships.

3. Operational Efficiency: Prolonged TAT often indicates underlying inefficiencies in the workflow and processes. Addressing these inefficiencies can lead to more streamlined operations, better resource utilization, and reduced operational costs. This project aims to identify and implement strategies that will make the chemotherapy process more efficient and effective.

4. Resource Utilization: Efficient use of resources, including staff time and medical supplies, is crucial in a busy oncology department. By optimizing TAT, the hospital can better allocate its resources, which will ensure that staff are utilized effectively and that there is minimal waste of medical supplies.

5. Benchmarking and Continuous Improvement: This study will provide valuable insights and data that can be used for benchmarking against other healthcare institutions. The findings and recommendations from this project can serve as a foundation for continuous improvement initiatives, helping the hospital to improve its position as a leader in oncology care

6. Professional Development: Being an interns, participating in this project offers a unique opportunity to engage in meaningful, hands-on research that has real-world implications. It has allowed me to develop critical skills in data analysis, process improvement, and healthcare management, which are valuable for their future careers.

In conclusion, optimizing the turnaround time for chemotherapy at NH MMI Narayana Super Speciality Hospital aligns with the hospital's commitment to providing high-quality, patient-centred care. This internship project will not only contribute to better patient outcomes and operational efficiency but also provide a valuable learning experience for the interns involved.

AIMS AND OBJECTIVES

AIM OF THE STUDY:

Optimizing turnaround time for chemotherapy: “Strategies for efficient and effective maintenance in oncology care”

OBJECTIVE OF THE STUDY:

1. To assess the Current Chemotherapy TAT by analysing existing TAT data to understand baseline performance.

2. To identify Bottlenecks by Determining key areas causing delays in the chemotherapy process.

3. To Implement Improvement Strategies by developing and apply interventions to reduce TAT.

4. To evaluate outcomes by measuring the impact of these interventions on TAT and overall patient care.

MATERIALS AND METHOD

1. Objectives:

* Primary Objective: To identify and implement strategies to optimize the turnaround time (TAT) for chemotherapy administration in the oncology department of NH MMI Narayana Super Speciality Hospital.
* Secondary Objectives: To evaluate the impact of optimized TAT on patient outcomes, patient satisfaction, and healthcare resource utilization.

2. Study Setting:
- Location: Oncology day care department of NH MMI Narayana Super Speciality Hospital.
- Duration: Two-month internship project.

3. Study Population:
- Inclusion Criteria: All patients scheduled to receive chemotherapy during the study period.
- Exclusion Criteria: Patients receiving chemotherapy as part of clinical trials or those with incomplete medical records.

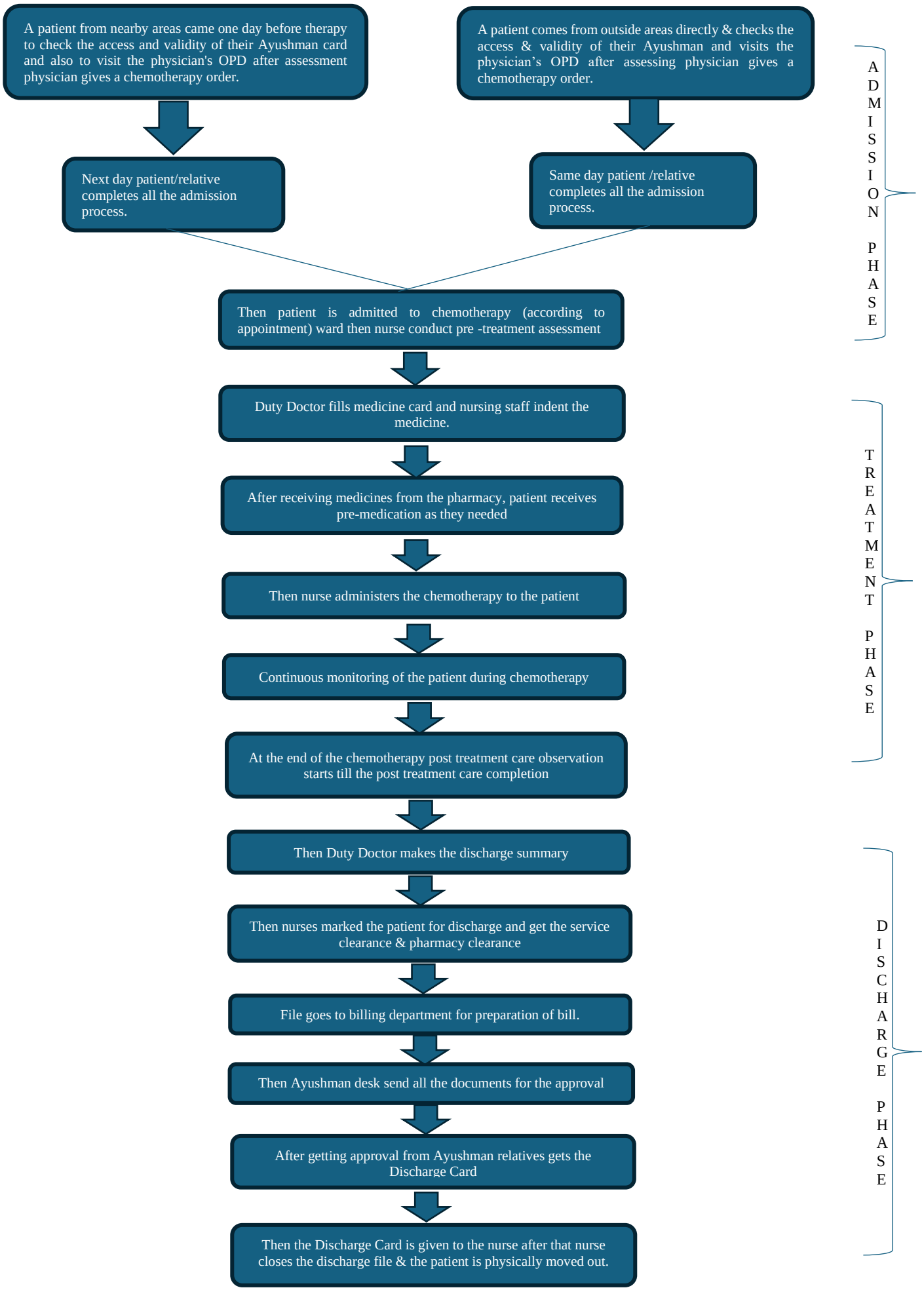
4.Study Design: A mixed-method approach was adopted, combining quantitative data analysis with qualitative insights from staff and patients.

Phase 1: Baseline Assessment

Data Collection: Data was collected on chemotherapy preparation, administration, and patient wait times. Interviews and focus groups with medical staff and patients provided additional context.

Process Mapping: Detailed mapping of the current chemotherapy administration process to identify key stages and potential bottlenecks.

PROCESS MAPPING

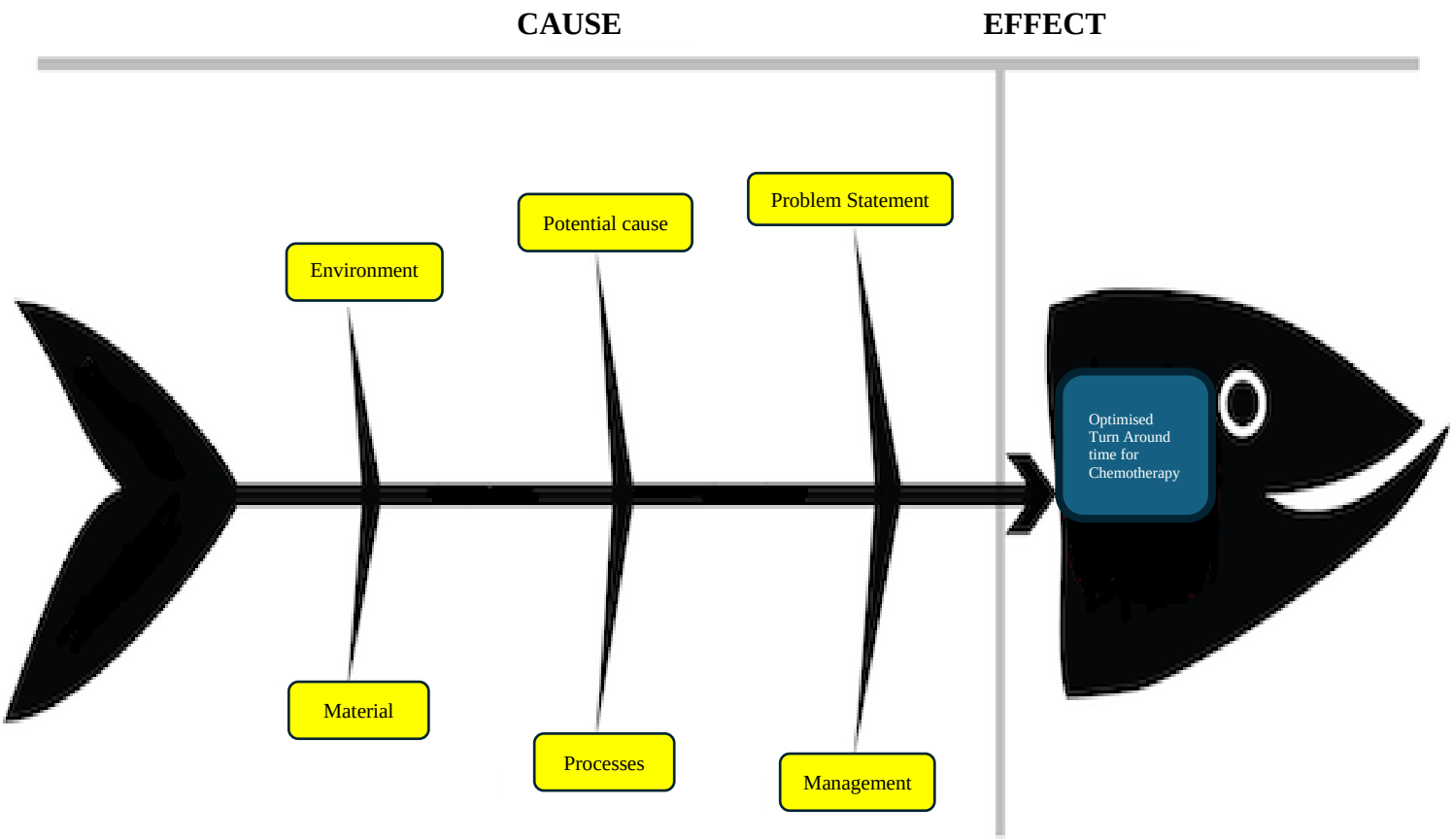


Stakeholder Interviews: Conduct interviews with oncologists, nurses, pharmacists, and administrative staff to gather insights on perceived challenges and inefficiencies.

Phase 2: Intervention Design

Root Cause Analysis: Utilize tools such as fishbone diagrams to identify the root causes of prolonged TAT.

FISHBONE DIAGRAM



1. Problem Statement: Prolonged TAT in oncology care maintenance projects.

2. Categories and Potential Causes:

People (Staff):

- Inadequate staffing levels.
- Insufficient training or expertise.
- Poor communication among team members.
- High staff turnover rates.

Processes:-

-Inefficient scheduling and workflow.

- Lack of standardized procedures.
- Delays in decision-making.
- Inadequate project management practices.

Equipment:
- Frequent equipment breakdowns.
- Outdated technology or tools.
- Insufficient availability of necessary equipment.
- Poor maintenance of existing equipment.

Materials:
- Delays in receiving necessary supplies.
- Inconsistent quality of materials.
- Shortage of essential materials.

Environment:
- Poorly designed workspaces.
- Ineffective layout of the care facilities.
- Safety hazards affecting work efficiency.

Management:
- Inadequate leadership and oversight.
- Lack of strategic planning.
- Poor prioritization of tasks.
- Insufficient resource allocation.

Analysis and Action Plan:

1. Analyse the Diagram:
- Review the potential causes listed in the fishbone diagram.
- Identify the most likely root causes contributing to prolonged TAT.

2. Prioritize Issues:
- Prioritize issues based on their impact and frequency.

3. Develop Action Plans:
- For each prioritized issue, develop specific action plans to address the root cause.
- Implement changes and monitor the impact on TAT.

4. Continuous Improvement:
- Continuously monitor TAT and other performance metrics.
- Regularly update the fishbone diagram as new issues arise and improvements are made.

During my pre analysis I had questioned patient related to issue what they are facing during chemotherapy and how we can make it effective and comfortable for them.

Question which was asked are mentioned below and are showed according to percentage wise.

Did you notice any irregularities in the timing of your doctor's appointment?

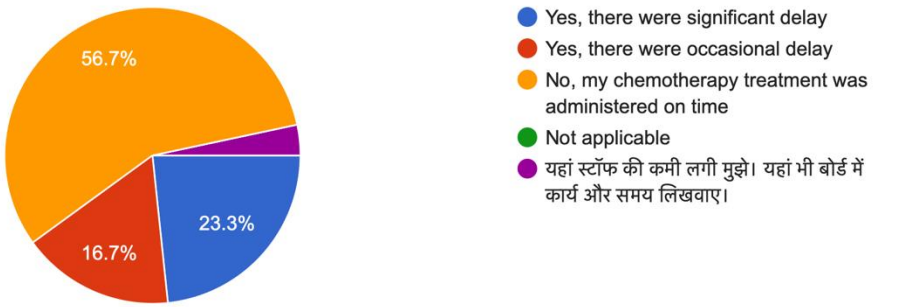
31 responses

Did you notice any irregularities in the timing or availability of resident doctors during your visit

31 responses

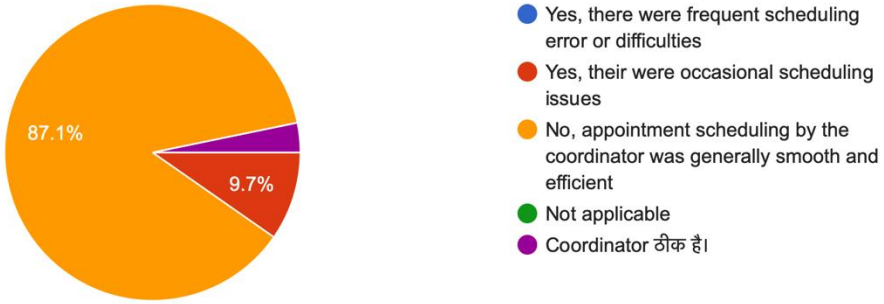
Did you experience any delay in receiving chemotherapy treatment during your appointment

30 responses



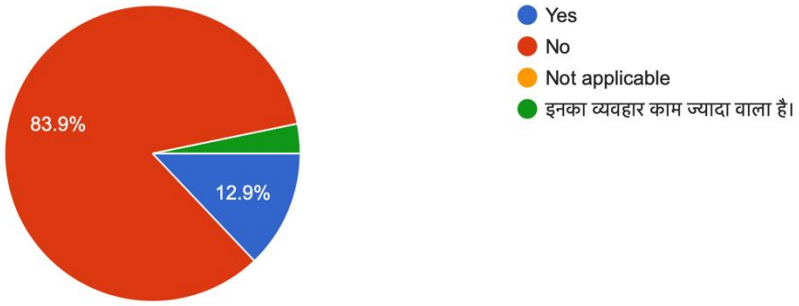
Did you encounter any issues with appointment scheduling by the Coordinator

31 responses



Did you experience any issues with the nurses during your visit?

31 responses



Example Action Plan:

- Staff Training:
  - Implement ongoing training programs for staff to enhance skills and knowledge.
- Standardize Procedures:
  - Develop and enforce standardized procedures for common tasks.
- Upgrade Equipment:
  - Invest in new technology and ensure regular maintenance of equipment.
- Improve Communication:
  - Establish regular team meetings and use effective communication tools.
- Optimize Workflow:
  - Conduct workflow analysis and implement changes to reduce bottlenecks.

- Strategy Development: Collaborate with hospital staff to design interventions aimed at reducing TAT. These may include process reengineering, staff training programs, and the implementation of new technologies or workflows.

Phase 3: Implementation:

Pilot Testing: On this study the focus is on improving the effectiveness in oncology care Implement selected interventions on a small scale to test their feasibility and effectiveness.

Pilot Study: Strategies for Efficient and Effective Maintenance in Oncology Care
Improvement strategies:

a) Enhanced communication between department using a real time tracking system.

b) Introduced staggered scheduling to reduce peak time congestion.

c) streamlined pharmacy workflow by arranging the drugs a day so that there so that there should not be any delay in dispending the medicine to the nurse station.

d) A day before chemotherapy scheduling patient appointment scheduling was done on outpatient basis and their dose confirmation was done.

e) Scanning the documents related to Ayushman Bharat scheme or not any Corporate patient so that on the day of chemotherapy administration there should not be any delay.

f) Streamlined chemotherapy drugs preparation work flow so that there should not be any delay in start of chemotherapy.

g) Streamlined discharge process criteria according to the end of chemotherapy.

When mentioning a pilot study on the topic of strategies for efficient and effective maintenance in oncology care, it's essential to provide a clear and structured description. This should include the study's purpose, methodology, findings, and implications.

The pilot was conducted in the oncology department, for improving the effectiveness in oncology care. This area was chosen due to its critical role in oncology diagnostics and its existing maintenance challenges.

Pilot Plan

- Duration: May 1st to June 1st 2024.

- Participants: Two maintenance technicians, one project coordinator, and radiology department staff.

- Resources: New diagnostic tools, training materials, and maintenance scheduling software.

- Metrics:
  - Average maintenance TAT before and after the pilot.

Implementation Steps:

1. Preparation: Trained technicians on new preventive maintenance procedures and diagnostic tools.

2. Execution:
   - Implemented weekly maintenance checks instead of bi-weekly.
   - Utilized new diagnostic tools to identify potential issues early.

3. Monitoring: The project coordinator tracked maintenance activities and collected data on TAT, breakdowns, and response times.

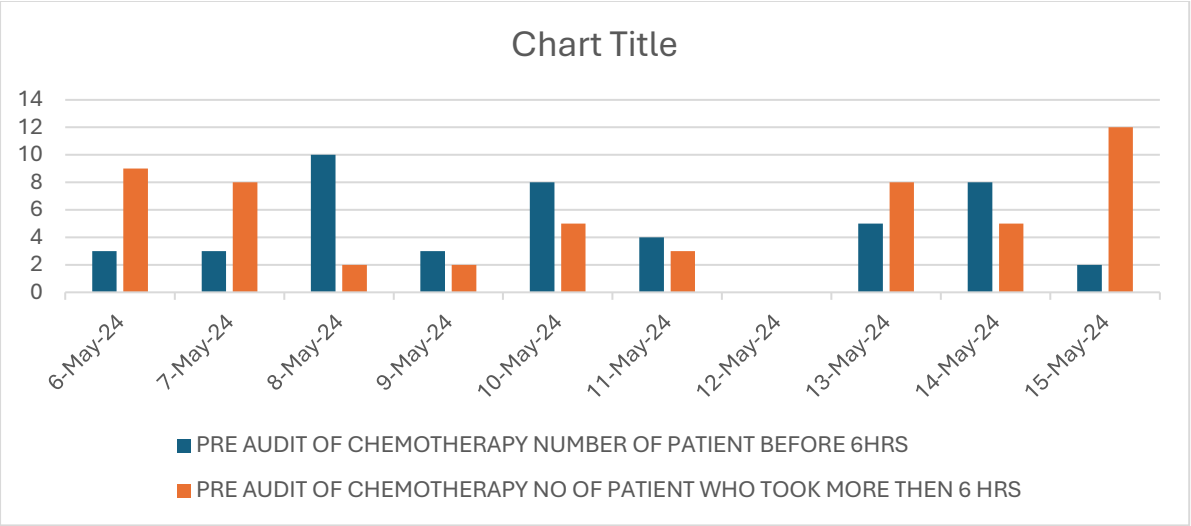
4.Data Collection Methods:

- Quantitative Data: TAT logs, breakdown frequency, response times was calculated pre analysis of chemotherapy. Certain strategies was planned and then it was implemented accordingly. After implementation, post analysis was done to analyse weather it had worked or not.

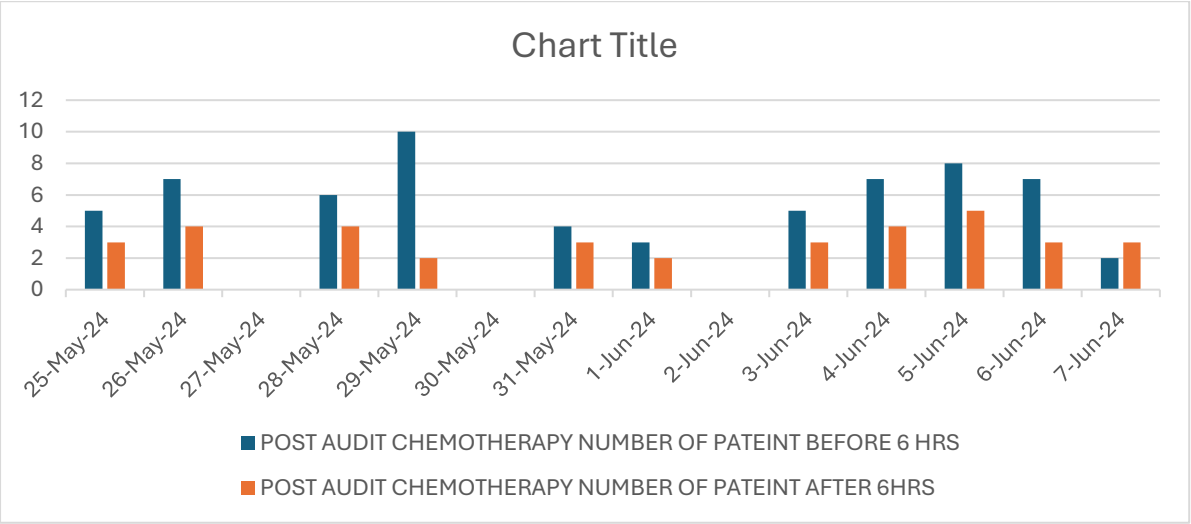
- Qualitative Data: Staff surveys and interviews to gather feedback on the new maintenance processes.

DATA ANALYSIS

PRE ANAYLSIS-DATA: Analysis was done on 100 patients.



POST ANAYSIS DATA: After implementation of certain strategies again post analysis was done on 100 patient.



• Qualitative Data: Staff surveys and interviews to gather feedback on the new maintenance processes.

RESULT

Pre audit			**Post audit**		
	Before 6	**More than 6**		**Before 6**	**More than 6**
Total no. of patient	46	54	Total no. of patient	55	30
	9				-24
Increase in 6 HRS	20%		Reduction in more than 6hrs	-44%	

• TAT Reduction:
Before 6 hours patient TAT on post analysis has increased by 20% and there is a reduction in more than 6hrs by -44%.

• Breakdowns: The number of unexpected breakdowns decreased by -44%.

4.2. Qualitative Findings

• Staff Feedback: Oncology staff reported improved workflow and less downtime. Oncology staff noted that the new diagnostic tools were effective in early problem detection.

• Satisfaction: Overall staff satisfaction with maintenance processes increased by 20%, based on survey responses.

DISCUSSION

The pilot study demonstrated that implementing weekly preventive maintenance checks and using strategic plans can significantly reduce TAT and equipment downtime in the oncology care setting.

RECOMMENDATION

Based on the pilot study findings, the following recommendations are proposed:

1. Gradual Rollout: Expand the new maintenance strategies to other departments within the oncology care facility, starting with high-impact areas like chemotherapy and radiation therapy units.

2. Additional Training: Provide ongoing training for maintenance staff on advanced diagnostic tools and preventive maintenance techniques.

3. Resource Allocation: Ensure adequate staffing and resources are available to support the new maintenance schedules.

4. Continuous Monitoring: Establish a continuous monitoring system to track maintenance performance and make necessary adjustments.

CONCLUSION

The pilot study provided valuable insights into the effectiveness of new maintenance strategies in reducing TAT and improving overall efficiency in oncology care. The success of the pilot suggests that a broader implementation of these strategies can lead to significant improvements in maintenance operations, ultimately enhancing patient care and operational efficiency.

This structured approach ensures that the pilot study is clearly communicated, highlighting its purpose, methodology, findings, and potential impact on the broader maintenance strategy within the oncology care facility.

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PROJECT REPORT 02

ENHANCING EFFICENCY IN PATHOLOGY: STRATEGIES FOR TURNAROUND TIME IMPROVEMENT.

TABLE OF CONTENT

TITLE

Enhancing efficiency in pathology: strategies for turnaround time improvement.

BACKGROUND AND INTRODUCTION

Background

Pathology is a critical field in medical diagnostics, providing essential insights that inform patient care and treatment plans. The efficiency of pathology laboratories, particularly the turnaround time (TAT) for test results, is crucial for timely diagnosis and treatment. Delays in TAT can lead to prolonged patient anxiety, delayed treatment decisions, and potentially adverse health outcomes.
In recent years, advancements in technology, process optimization, and workflow management have offered new opportunities to enhance the efficiency of pathology laboratories. Despite these advancements, many labs still face challenges in reducing TAT due to factors such as high test volumes, complex testing procedures, and logistical constraints. Addressing these challenges is vital for improving the overall quality of healthcare services.

Introduction

This internship project, titled "Enhancing Efficiency in Pathology: Strategies for Turnaround Time Improvement," aims to investigate and implement effective strategies to reduce TAT in pathology laboratories. The project will focus on identifying bottlenecks in current workflows, evaluating the impact of new technologies and methodologies, and proposing actionable improvements.

Rationale of the Study

The rationale for this study on enhancing efficiency in pathology laboratories, with a specific focus on strategies for improving turnaround time (TAT), is grounded in several critical considerations:

1. Patient Care and Outcomes
Timely and accurate diagnostic results are paramount in clinical decision-making and patient care. Prolonged TAT can delay diagnosis, treatment initiation, and patient management, potentially leading to adverse health outcomes. By improving TAT, pathology labs can contribute to faster clinical responses, reduce patient anxiety, and enhance overall patient outcomes.

2. Operational Efficiency
Pathology laboratories are often faced with high workloads and limited resources, making operational efficiency a significant concern. Streamlining processes to reduce TAT can lead to better resource utilization, decreased backlogs, and improved workflow. This efficiency not only benefits the laboratory but also aligns with broader healthcare objectives of cost reduction and enhanced service delivery.

3. Technological Advancements
The field of pathology is experiencing rapid technological advancements, including automation, digital pathology, and advanced data analytics. Leveraging these technologies can significantly reduce manual processes, minimize errors, and expedite diagnostic procedures. This study aims to explore how these innovations can be effectively integrated into lab workflows to enhance TAT.

4. Quality of Healthcare Services
Improving TAT in pathology is a critical component of healthcare quality improvement initiatives. Faster diagnostics contribute to shorter hospital stays, reduced readmission rates, and better utilization of healthcare facilities. This, in turn, improves patient satisfaction and the overall perception of healthcare services.

5. Benchmarking and Best Practices
Identifying and implementing best practices in TAT improvement can serve as a benchmark for other pathology labs and healthcare institutions. Sharing successful strategies and outcomes from this study can promote wider adoption of efficient practices, leading to systemic improvements in pathology services.

6. Regulatory and Accreditation Requirements
Many regulatory bodies and accreditation organizations set standards for TAT as part of their quality benchmarks. Meeting or exceeding these standards is essential for maintaining accreditation, ensuring compliance, and demonstrating commitment to quality and excellence in pathology services.

7. Economic Implications
Efficient pathology operations can lead to significant cost savings by reducing the need for repeat tests, optimizing staffing levels, and minimizing overtime expenses. Improved TAT can also enhance the lab's capacity to handle increased test volumes without compromising quality, potentially leading to higher revenue.

AIM AND OBJECTIVES

Aim
The primary aim of this internship project is to enhance the efficiency of pathology laboratory operations by implementing strategies to improve turnaround time (TAT). The goal is to ensure timely and accurate diagnostic results, thereby improving patient care and optimizing laboratory workflow.

Objectives
1. Assess Current Workflow:
- Conduct a comprehensive analysis of the existing pathology lab processes to identify key factors contributing to delays in TAT.
- Map out the entire workflow from specimen receipt to result delivery to pinpoint bottlenecks and inefficiencies.

2. Benchmark Performance:
- Establish baseline metrics for current TAT and overall lab performance.
- Compare current performance with industry standards and best practices to identify areas for improvement.

3. Implement Technological Innovations:
- Explore and integrate advanced technologies such as automation, digital pathology, and data analytics to streamline laboratory operations.
- Evaluate the effectiveness of these technologies in reducing manual processes and minimizing errors.

4. Optimize Processes
- Develop and implement process optimization strategies, including lean management principles and Six Sigma methodologies, to eliminate inefficiencies.
- Standardize procedures and protocols to ensure consistency and accuracy in lab operations.

5. Enhance Staff Training and Engagement**
- Provide targeted training for lab personnel on new technologies and optimized processes.
- Foster a culture of continuous improvement and staff engagement to ensure sustainable efficiency gains.

6. Evaluate Impact
- Measure the impact of implemented strategies on TAT and overall lab efficiency.
- Assess improvements in patient outcomes and satisfaction as a result of reduced TAT.

7. Document and Share Best Practices
- Compile a comprehensive report detailing the strategies implemented, challenges faced, and results achieved.
- Share findings and best practices with other pathology labs and healthcare institutions to promote wider adoption of successful strategies.

8. Ensure Compliance and Quality Assurance
- Ensure that all changes and improvements comply with relevant regulatory and accreditation standards.
- Implement ongoing quality assurance measures to maintain high standards of accuracy and reliability in diagnostic results.

By achieving these objectives, the project aims to not only improve the efficiency and effectiveness of the pathology laboratory but also enhance the overall quality of patient care and satisfaction.

MATERIALS AND METHOD

1. Study Setting:
- Location: Pathology department of NH MMI Narayana Super Speciality Hospital.
- Duration: Two-month internship project.

2. Study Population:
To define the study population for the project "Enhancing Efficiency in Pathology: Strategies for Turnaround Time Improvement" at Narayana Health (NH) MMI Narayana Super speciality Hospital, it’s important to establish clear inclusion and exclusion criteria.

Here is a detailed outline:
Inclusion Criteria:

*. Pathologists:
- Employed at NH MMI Narayana Super speciality Hospital.
- Actively involved in the diagnosis and reporting of pathology results.

*. Pathology Technicians/Technologists:
- Employed in the pathology department of the hospital.
- Directly involved in the preparation, processing, and analysis of pathology specimens.

*. Laboratory Managers/Supervisors:
- Responsible for overseeing laboratory operations at the hospital.
- Involved in decision-making processes related to workflow and efficiency improvements.

*. Healthcare Providers:
- Doctors and nurses who regularly request and utilize pathology reports for patient care.
- Affiliated with NH MMI Narayana Super speciality Hospital.

*. Administrative Staff:
- Staff members involved in the administrative processes of the pathology department, such as scheduling, data entry, and communication.
- Employed at the hospital.

*. Patients:
- Individuals who have received pathology services at NH MMI Narayana Super speciality Hospital within the past year.
- Willing to participate in surveys or interviews regarding their experience with the timeliness of pathology results.

Exclusion Criteria:

*. Pathologists:
- Pathologists not employed by NH MMI Narayana Super speciality Hospital.
- Pathologists involved only in research and not in diagnostic services.

*. Pathology Technicians/Technologists:
- Technicians not employed in the hospital's pathology department.
- Those on extended leave or not currently active in their roles.

*. Laboratory Managers/Supervisors:
- Managers or supervisors not involved in day-to-day laboratory operations or those who are from other departments.

*. Healthcare Providers:
- Providers who do not regularly interact with the pathology department or use its services.
- Providers not affiliated with NH MMI Narayana Super speciality Hospital.

*. Administrative Staff:
- Staff members not involved in the pathology department's administrative processes.
- Temporary staff or those not currently active in their roles.

*. Patients:
- Patients who have not used pathology services at NH MMI Narayana Super speciality Hospital.

3.Study Design: Mixed-Methods Approach

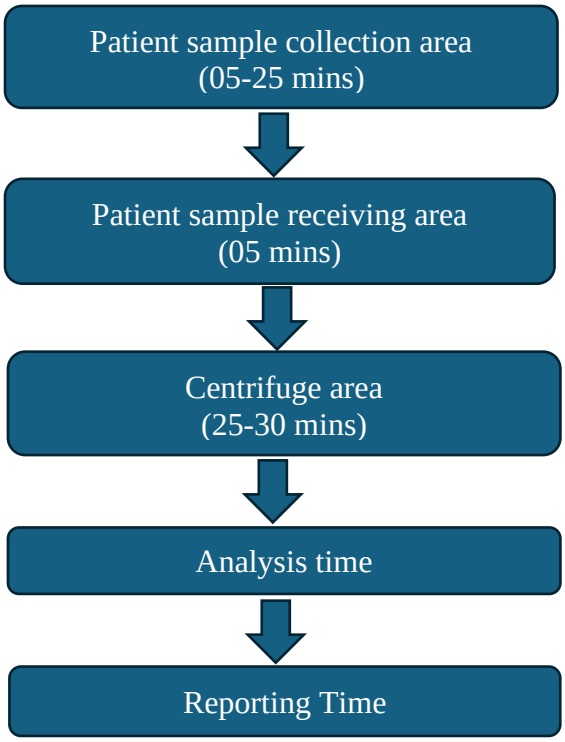
1. Phase 1: Quantitative Analysis
- Objective: To measure current turnaround times and identify key bottlenecks and inefficiencies.

- Data Collection:
- Retrospective Data Analysis: Review historical data from the hospital's Laboratory Information System (LIS) to analyse turnaround times for various types of pathology tests over the past year.
- Key Metrics: Average turnaround time, variance in turnaround times, and comparison of turnaround times across different types of tests and departments.

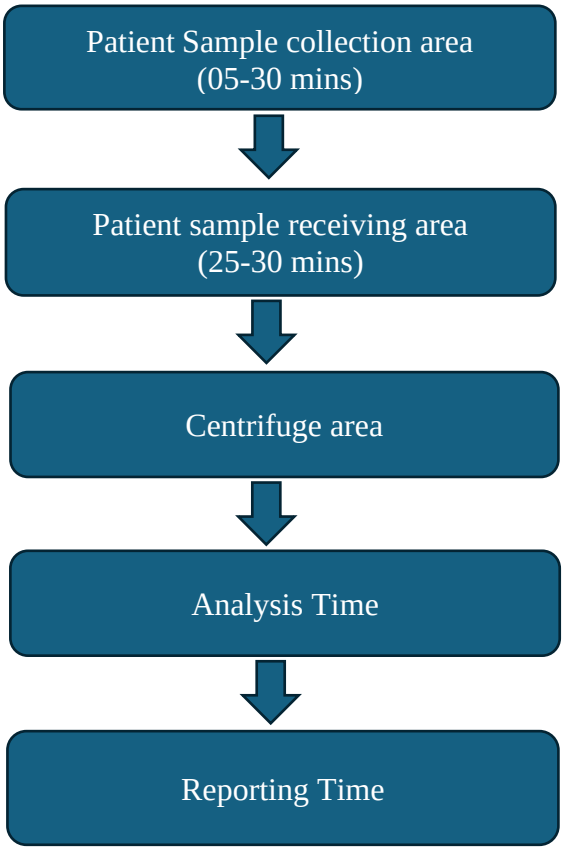
- Data Analysis:
- Statistical Analysis: Use descriptive statistics to summarize current turnaround times. Perform inferential statistics to identify significant differences and correlations between variables (e.g., test type, volume, staffing levels).

Process mapping.

CASE - 1 ANAYSIS OF PATHOLOGY



CASE - 2 PATHOLOGY ANAYSIS TIME



2. Phase 2: Qualitative Analysis

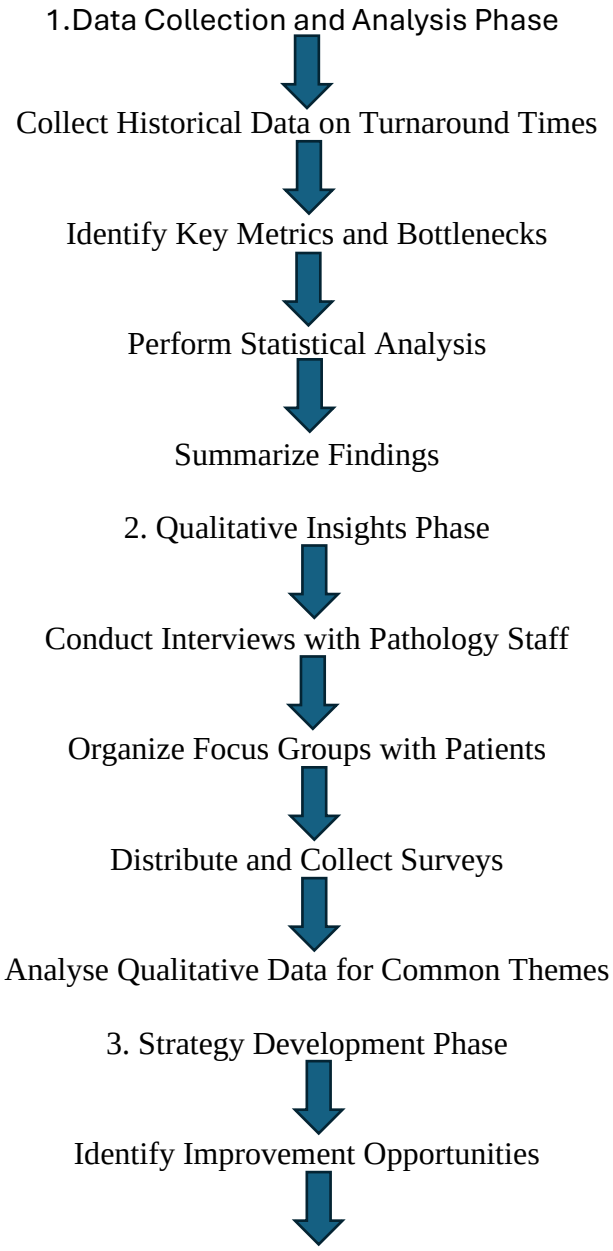
Objective: To gather insights into the subjective experiences and perceptions of staff and patients regarding pathology turnaround times.

- Data Collection:
  - Interviews: Conduct semi-structured interviews with pathologists, technicians, laboratory managers, healthcare providers, and administrative staff. Focus on understanding workflow processes, perceived inefficiencies, and suggestions for improvement.
  - Focus Groups: Organize focus groups with patients who have experienced pathology services to gather feedback on their satisfaction with turnaround times and the impact on their care.
  - Surveys: Distribute structured surveys to a larger sample of staff and patients to gather broader insights and identify common themes.

3. Phase 3: Intervention and Pilot Testing

- Objective: To implement and evaluate selected strategies for improving turnaround times.

- Intervention Design: strategies which are made to show improvement in turnaround time in pathology are mentioned below



Develop Targeted Interventions

Workflow Redesign Staff Training Process Automation

Plan Pilot Testing of Interventions

4. Pilot Testing Phase
Implement Interventions in Controlled Setting

Monitor Turnaround Times

Collect Feedback from Staff and Patients

Analyse Pre- and Post-Intervention Data

5. Evaluation and Adjustment Phase
Compare Results and Assess Effectiveness

Adjust Strategies Based on Feedback and Data

Prepare Final Recommendations

6. Implementation Phase

Present Findings to Management and Stakeholders

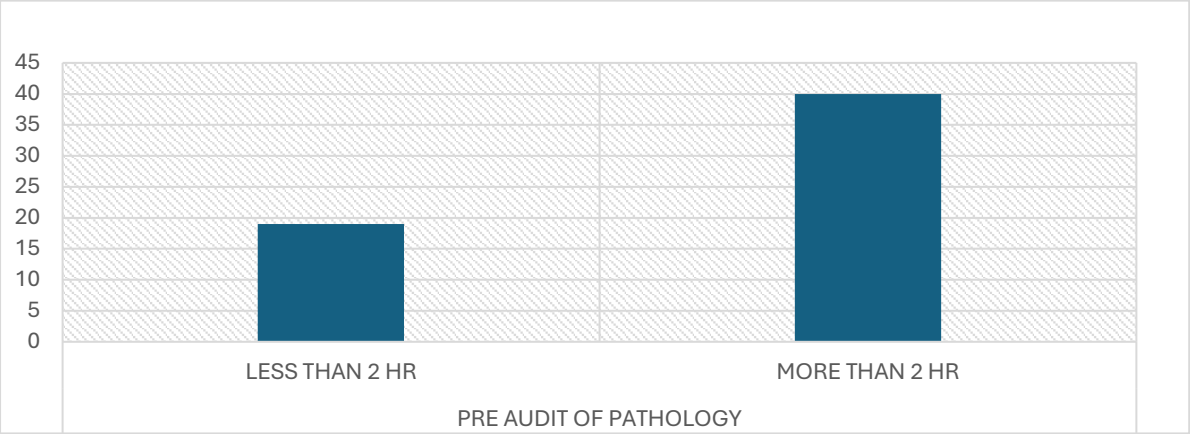
Develop Implementation Plan for Hospital-Wide Rollout

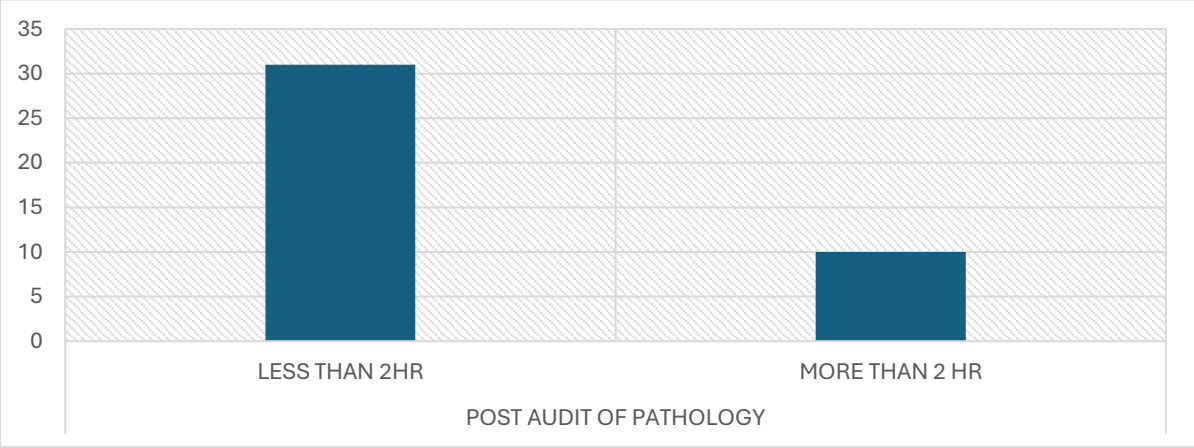
Monitor and Sustain Improvements

- Pilot Testing:
  - Implement the selected interventions in a controlled setting or specific department.
  - Monitor and measure the impact of these interventions on turnaround times over a defined period.

- Data Collection:
  - Pre- and Post-Intervention Analysis: Compare turnaround times and other key metrics before and after the intervention.

DATA ANALYSIS





ETHICAL CONSIDERATION

- Informed Consent: Obtain informed consent from all participants involved in interviews, focus groups, and surveys.

- Confidentiality: Ensure the confidentiality of all data collected and maintain anonymity of participants in reporting.

- Approval: Seek approval from the hospital's ethics committee or institutional review board (IRB) before initiating the study.

By employing this mixed-methods design, the study aims to thoroughly understand and address the factors affecting turnaround times in the pathology department, leading to practical and effective strategies for improvement.

RESULT

	PRE-AUDIT OF PATHOLOGY	
	LESS THAN 2 HR	MORE THAN 2 HR
Total	19	40
Difference	12	
Increase in < 2 hrs	63%	

	POST AUDIT OF PATHOLOGY	
	LESS THAN 2HR	MORE THAN 2 HR
Total	31	10
Difference		-30
Reduction in > 2 hrs		-75%

• TAT Reduction:
Before 2 hours patient TAT on post analysis has increased by 63% and there is a reduction in more than 2hrs by -75%.
• Breakdowns: The number of unexpected breakdowns decreased by -75%.

4.2. Qualitative Findings
• Staff Feedback: Pathology staff reported improved workflow and less downtime. Pathology staff noted that the new diagnostic tools were effective in early problem detection.
• Satisfaction: Overall staff satisfaction with maintenance processes increased by 63%, based on survey responses.

REPORTING AND RECOMMENDATION

- Objective: To synthesize findings and provide actionable recommendations for long-term improvement.

- Report Preparation:
  - Summarize quantitative and qualitative findings.
  - Provide detailed recommendations for process improvements, resource allocation, and potential areas for future research.

- Presentation:
  - Present findings and recommendations to hospital management, pathology department staff, and other stakeholders.
  - Develop a plan for the implementation of recommended strategies on a larger scale.

REFERENCES

Here are some useful references related to the topics discussed in the document:

1. **Improving Patient Flow in Chemotherapy**
   - A study on optimizing patient flow and reducing waiting times in outpatient chemotherapy infusion centres, highlighting approaches like stochastic optimization and appointment templating.
     Source:

     U-M CHEPS ps://cheps.engin.umich.edu/wp-content/uploads/sites/118/2015/08/Martinez-and-Rouhana-Improving-Patient-Flow-in-an-Outpatient-Chemotherapy-Infusion-Center.pdf).

2. **Lean Methodology in Healthcare**

   A systematic review on applying PLOS es to reduce laboratory turnaround time (TAT) and improve patient satisfaction by eliminating inefficiencies in clinical settings.
   Source: [PLOS ONE](https://journals.plos.org/plosone/article?id=10.:contentReference[oaicite:2]{index=2}s

   - Research examining patient TAT in oncology outpatient settings, detailing key factors that influence delays and suggesting workflow optimizations.
     Source: International Journal for Multidisciplinary Research.

3. **Clinical Laboratory Efficiency**
   - The impact of lean methodology on improving the speed, quality, and profitability of laboratory services, with a focus on enhancing operational eff

     U-M CHEPS

     https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0312033).

4. **Workflow and Process Optimization**
   - Using discrete event simulations to test and measure improvements in healthcare processes, including phlebotomy and chemotherapy administration.
     Source: University of Michigan Comprehensive Cancer Center.