

DISSERTATION

AT



Shalby Multi-Specialty Hospital, Jaipur

(March – July 2022)

Project Title

**STUDY ON TURNAROUND TIME IN RADIOLOGY DEPARTMENT FOR THE
PATIENTS ADVISED X RAY, USG, MRI AND CT SCAN**

BY-

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OBSERVATIONAL LEARNING



Brief Description About The Organization

Shalby Hospital is established by Dr Vikram Shah in 1994. First Hospital established in Gujrat (Ahmedabad). Shalby hospital has chain of multi-specialty Hospital in India. Shalby Jaipur Holding bed capacity of 237 Hospitals beds, Shalby reorganization as a multi-specialty hospital chain in the Indian healthcare industry was established by its founder.

Approach to Healthcare

Persistent centric care through proficient and moral approach is the trademark of Shalby Hospital

Modest Beginning & Thundering Success

Modest Starting & Thundering success Shalby Hospital may be a word renowned joint replacement Setting up numerous records. Since 2007 we have effectively performed thousands of joint replacement surgeries, and the number is rising day by day. The change of shalby into a chain of multispecialty healing centers in around 26 a long time talks volumes for our validity and energy for Healthcare Excellence.

Shalby Multispecialty Hospital

Jaipur's Multispecialty Hospital located in Chitrakoot, Vaishali Nagar, This Healing Center, Which is stretched over The 42,033 sq. ft. with a area of 192550 sq ft is the best equipped multispecialty hospital in Jaipur's western region. It is one of a kind Multi specialty Hospital with 237 beds, including 23 Basic care beds for restorative and surgical care.

- Sports Pharmaceutical & Orthopedics Shalby Jaipur provides multi-specialty care throughout the spectrum

- Replacement of Joints
- Cardiology
- Oncology, Restorative, Plastic and Reconstructive Surgery
- Cosmetic Dentistry, Dental implants and Dental surgery
- Emergency Cases
- Trauma & Causality
- Gastroenterology and Endoscopy
- Ophthalmology
- Arthroscopy
- Replacement of Joints
- Cardiology is the study of Heart
- Oncology, Restorative, Plastic and Reconstructive Surgery

Address:

Near Gandhi Path underpass, 200ft.Bypass, Vaishali Nagar, Jaipur Rajasthan (302021)

Email: www.shalby.org

Mission:

“Leveraging worldwide administration in joint replacement to set up multi-specialty care over Geographies”

Vision:

“Exceeding expectation from Health

Values:

We esteem each Human Life Put in our hands and always work towards assembly the desires of our patient and partners by raising the benchmarks of our benefit conveyances, each time.

Specific Objectives:

To understand and to learn day to day micro level operations of management.

Provide some specific solution for specific problem that we had in that area.

ABBREVIATIONS

X RAY	X Radiation
MR	Magnetic Resonance Imaging
CT	Computed tomography
USG	Ultrasonography

PART B

PROJECT REPORT

STUDY ON TURNAROUND TIME IN RADIOLOGY DEPARTMENT FOR PATIENTS ADVISED FOR X RAY, USG, MRI AND CT SCAN IN SHALBY HOSPITAL

ABSTRACT

Background: It's essential that imaging departments provide reporting of images timely manner which provide reporting of the images in timely manner to provide high quality of effective patient centered imaging services. Measure ment of turn around time of report is most commonly adopted performance metric. Rapid turn around time of reports important from both medical N commercial point of view. As a part of induction programmed operations, functioning of certain departments of hospital was observed which is based small presentation summarizing understanding was prepared which gave direction to the study conducted.

Aims & Objective:

The purpose of the learning is to raise the caliber of imaging services. The study's aims are To comprehend the Radiology Department's reporting process flow.

- To determine the turnaround time (TAT) for reports for OPD and IPD patients following a scan in the radiology department.
- To determine the causes of any reporting delays.
- To make recommendations for improving the turnaround time for reporting.

Methods:

The study, which took place over the course of three months at the Radiology department of Shalby Multispecialty Hospital in Jaipur, was cross-sectional and descriptive in nature. Direct observation, time studies, and conversations with department staff were used to gather data; however, a workflow diagram was created to help explain the reporting process. For the study, 240 reports totaling 60 each from an X-ray, a USG, a CT scan, and an MRI were included in the sample. Radiologists, employees- patient care services, typists, groundduty assistants, and technician s made up the majority of the study's participants.

Results: According to the TAT the highest waiting time is observed is in the MRI Investigation and the lowest found in the X Ray investigation.

INVESTIGATIONS	ABOVE STIPULATED TIME	WITHIN STIPULATED TIME
X RAY	12%	88%
MRI	70%	30
CT SCAN	38%	62%
USG	35%	65%

- **Conclusions:** The reduced TAT in X Ray may be due to;
- Less duration of time scans of patient in X Ray and somehow shorter scan times than MRI.
- The increased TAT in MRI may be due to;
- Longer scan times
- Unpredictable delays because of additional sequences
Patient movements which lead to repeat scans

Keywords:

TAT Turnaround time, Reporting process flow, TAT of report

INTRODUCTION

In order to analyze workflows in healthcare information systems, turnaround times can be assessed. The period between ordering and doing an imaging examination is referred to as the turnaround time, or TAT. The delivery of images and referral to the clinical units takes place during the transfer time, or TT. TAT is crucial since it not only improves the efficiency with which businesses and laboratories operate, but it also helps to fortify the bonds between clients and business leaders. To deliver high-quality and productive patient-centered imaging services, imaging departments must promptly provide the reporting of pictures. Evaluation of the turnaround time of the report is significant from both a medical and a business perspective. The radiology department's activities and operation are observed as part of the introduction programme. A patient's wait time in the radiology department is referred to as their waiting time. Hospital service quality is significantly influenced by the length of time patients must wait for care. One of the most annoying aspects of the health care delivery system is frequently this. Therefore, it is critical to reduce patient wait times. This study was done to find out what challenges patients encounter when they arrive at the radiology department for tests like X-rays, MRIs, CT scans, and ultrasounds as well as how long they wait there before the procedure is finished. Relevance of TAT Improved operational turnaround time credits your daily revenue and lengthens your monthly revenue cycle. You gain greater credibility from clients, recommendations, and business partners when you offer reports more quickly and reliably. Additionally, quicker service delivery results in a rise in the daily sample processing volume.

With a shorter delivery period, monthly throughput can be doubled. Physicians can respond to reports considerably more quickly thanks to shortened reporting times. The patient service time is improved. As a result, this timeline optimization enhances both doctors' and patients' interactions with the diagnostic facility. These tangible and intangible benefits give your laboratory centre the chance to grow.

OBJECTIVES

Broad Objective

- To assess the turnaround time in Radiology department of the Shalby Multi-speciality hospital

Specific Objective

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- To assess the time interval from registration of the patient till completion of X-Ray, MRI and CT and USG study.
- To analyse the time from completion of X ray, MRI, CT scan and USG, to generation of report and handling over the report to the patient.
- To provide recommendations based on study findings.

LITERATURE REVIEW

- The study conducted by Sadhna Nandwana, Gail Walls, Susan Reich in the year of 2020 on “Learning from Experience “Minimizing Patient Delays in Radiology: Optimizing on- Time Starts for CT Procedures”

The goal of the study was to identify and analyse the factors that consistently cause first outpatient procedure, which was scheduled to begin at 8:30AM, to start late. It also sought to establish a standardised procedure for increasing on-time starts from 11% to greater than 50% within 20 weeks. Multiple causes, including problems with the environment, people, processes, and materials, were discovered through root cause analysis. In addition to standardising the process map with precise time allotments and role assignments for the procedural team, 14 tests of change were designed. The mean TAT dropped throughout the implementation phase from 71.5 to 21 minutes. During the control period, the mean TAT further fell, to 15.9 minutes. Exams beginning within 15 minutes of the scheduled appointment time increased from 11% to 60% with significant. Outliers being due to patient late arrival and difficult IV access. Excluding these causes, on time starts improved to 82%.

- The study conducted by Monica CVillarreal , Bradley SRostad , Richard Wright , Kimberly E Applegate in the year of 2015 Improving Procedure Start Times and Decreasing Delays in Interventional Radiology: A Department's Quality Improvement Initiative

The goal of the study was to use concepts of continuous quality improvement to find and eliminate causes of treatment start time delays, particularly for the first patients of the day, within the interventional radiology (IR) divisions of the Department of Radiology. Within an IR practise, procedure start time delays are caused by a variety of intricate circumstances. Reducing IR delays was successful using an interdisciplinary team strategy that was data-driven and patient-centred. When patients were prepared for their procedure, the wait time for them to enter the treatment room was decreased by 10 minutes on average (P value .01). The number of hours spent waiting for patient care per 100 patients dropped from 30.3 to 21.6. (29 percent reduction). Patient treatment delays decreased from 46.6 to 40.1 per 100 patients (17 percent reduction). Waiting for consent was the primary cause of delays (26 percent of delays), followed by laboratory tests (12 percent).

- The study conducted by Sadhna Nandwana , GailWalls , Susan Reich in the year of 2020 Learning from Experience: "Minimizing Patient Delays in Radiology: Optimizing On-Time Starts for CT Procedures"

The goal of the study was to identify and analyse the reasons that consistently delayed the start of the 8:30 AM first outpatient operation and to develop a standardised method to boost on-time beginnings from 11% to more than 50% within 20 weeks. Multiple causes, including problems with the environment, people, processes, and materials, were discovered through

root cause analysis. In addition to standardising the procedure map with precise time allotments and role assignments for the procedural side, 14 tests of change were designed. The mean TAT dropped throughout the implementation phase from 71.5 to 21 minutes. During the control period, the mean TAT further fell, to 15.9 minutes. Exams preparatory within 15 minutes of the scheduled time increased from 11 to 60 percent, with the main causes of substantial outliers being patient lateness and challenging IV access. 82 percent of starts occurred on time after excluding these factors.

Rationale:

Turnaround time is one of the main concerns patient of radiology Department imaging is one of the most important aspects of diagnose disease.

In Shalby Multispecialty Hospital the Benchmark for TAT of XRAY, USG, CT SCAN is 2 Hours whereas for MRI Its 3 Hours, study was conducted to ensure benchmark to increase competence of Radiology Department

PROCESSFLOW

Patient enters in the Radiology Department

Reporting in the department till the patients get in for the investigation
(waiting Period)

Investigation in and Investigation out time (Scanning Time)

Investigation out till the Report Generated Time

METHODOLOGY

Study Design: Cross sectional study

Study Location: Shalby Multispecialty Hospital

Sampling Method: Observation method

Study Period: 3 months

Sample Size: The sample size leading survey is around 240 patients in total, 60 Patients of CT scan, 60 patients of USG, 60 patients MRI and 60 patients of X RAY, Observing whole in and out time daily in the Radiology Department.

Study Tool: Primary data collection was done by observation of the time taken by patients to complete each process right from the time of reporting time in radiology department to the report collection.

INCLUSION CRITERIA: Only MRI, USG, CT scan and X ray investigations are included in this study.

Only Abdomen and pelvis investigations are included for USG Examination

EXCLUSION CRITERIA: Emergency patients, Sunday and Night shifts were excluded due to prioritization of immediate scanning

Endoscopy NCV investigations are excluded because of their known longer patient preparations and investigation time.

METHOD OF DATA COLLECTION

In this project, the observational research method is use for the Data collection, Numbers of patient visiting IPD and OPD are considered.

Sampling Size (N 240)

- MRI 60 Patients
- CT Scan 60 Patients
- USG 60 Patients
- X Ray 60 Patients

DATA ANALYSIS PLAN

Quantitative data analysed using data analysing software- MS excel.

By Dividing Data into:

T1	Reporting in the department till the patients get in for the investigation (waiting Period)
T2	Investigation in and Investigation out time (Scanning Time)
T3	Investigation out till the Report Generated Time

STIPULATED TIME OF THE HOSPITAL

PROCEDURE	TURN AROUND TIME
X RAY	2 HOURS
MRI	3 HOURS
USG	2 HOURS
CT SCAN	2 HOURS

DATA COMPILATION, ANALYSIS AND RESULT

Data were collected from CT Scan, MRI, USG And X Ray in Shalby Multispecialty Hospital, Jaipur and analyzed by using MS-Excel presented through Table and Graphs.

The above graph displays the distribution of TAT patients. Patients involved in the study as a whole is 240 in which the patients observed for the TAT in X Ray are 60 in number. The stipulated time for the X Ray is 2 hours according to the Hospital, by calculating the TAT 12% of the patients is founded above the stipulated time whereas 88% of patients are within the stipulated time.

The above graph displays the distribution of TAT patients. Patients involved in the study as a whole is 240 in which the patients observed for the TAT in MRI are 60 in number. The stipulated time for the MRI is 3 hours according to the Hospital, by calculating the TAT 70% of the patients is founded above the stipulated time whereas 30% of patients are within the stipulated time.

The above graph displays the distribution of TAT patients. Patients involved in the study as a whole 240 in which the patients observed for the TAT in CT scan are 60 in number. The stipulated time for the CT scan is 2 hours according to the Hospital, by calculating the TAT 38% of the patients is founded above the stipulated time whereas 62% of patients are within the stipulated time.

The above graph displays the distribution of TAT patients. Patients involved in the study as a whole is 240 in which the patients observed for the TAT in USG are 60 in number. The stipulated time for the USG is 2 hours according to the Hospital, by calculating the TAT 35% of the patients is founded above the stipulated time whereas 65% of patients are within the stipulated time.

DISCUSSION

Radiology is being urged to be the Medical Six Million Dollar Man in today's healthcare system; the field is expected to be stronger, faster, and better than ever. The fastest turnaround time for radiological reports is also essential to that success. The study was conducted to know about the waiting time and the turn around time of the radiology department of shalby multispecialty hospital. The study was conducted in Shalby Multispecialty Hospital Jaipur, Where the sample of the population were taken from the OPD and IPD Patients in the month of March to June 2022, the study was conducted on the

“TURNAROUND TIME IN RADIOLOGY DEPARTMENT FOR PATIENTS ADVISED FOR X RAY, USG, MRI AND CT SCAN”.

The Turn around time is monitored by the patients who arrived at radiology department till the time of report generated. The Gaps resulting in the Delay of the investigations like Xray, USG, MRI and CT Scan. The reason for the Delay are mentioned by the Pie Diagram. The quantitative data is used to prepare charts and graphs. It was observed that the stipulated time for the X Ray I the radiology department was 2 hours where the observed study concluded that the time taken for the X Ray procedure were 12% above the stipulated time whereas the remaining 88% was in the stipulated time, Which I observed the delay of the X ray procedure were less than the other investigations time the delay were usually because of the X Ray machine the scanning time is less than the other investigations scanning time. The delays were usually seen because of the X Ray machine was not working ad due to the lacking of staff. The observation study for the USG (sonography) concluded that the 35% of the TAT Time was above the stipulated time of the Hospital which was 2 hours till the time of patient enters to the time of report generated and the patient leaves, around 65% of the patients TAT was found within the stipulated time. The delays major cause was because of the longer patient preparation (such as full bladder). The doctor needs to wait for the patient till their bladder get full as it was essential for the sonography investigation process. The delays I found is just because of this thing. Comparatively to the XRAY and USG the study of CT scan was higher as the time observed above the stipulated time was 38% and within the stipulated time was 62%. The Stipulated tie of the Hospital is 2 hours. Generally, the major cause of the delays was because of the contract given to the patients. The last study which was observed in the radiology department was the study of the MRI investigation, The stipulated time for the MRI study in the Shalby multispecialty Hospital was 3 Hours the observation study concluded that the MRI Investigation time was the most as compared to the other investigations. About 70% of the MRI TAT Time was above the stipulated time whereas 30% of the TAT is within the stipulated time. The major reasons behind the delay of MRI Investigation is Longer scan times, Unpredictable delays because of additional sequences, Patient movements which lead to repeat scans.

TAT CONCLUSION

- The maximum TAT was observed for MRI and minimum was observed for X RAY.
- Maximum values for MRI and CT SCAN, TAT have exceeded the stipulated time given by the department
- Maximum values for USG and X RAY are well within the stipulated time

- The reduced TAT in X Ray may be due to;
- Less duration of time scans of patient in X Ray and somehow shorter scan times than MRI.
- The increased TAT in MRI may be due to;
- Longer scan times
- Unpredictable delays because of additional sequences
- Patient movements which lead to repeat scans
- The increased TAT in USG may be due to;
- Longer patient preparation (such as full bladder)

RECOMMENDATIONS

- Reasons for prolong time in giving reports should be resolved which will decrease waiting period preventing patients from walking out even after they have received the requisition number.
- Centre should fill outpatient feedback form on regular basis for patient satisfaction.
- One dedicated help desk staff who can assist patients with directions and whom to see, since a lot of patients were observed crowding at admission counters inside the department.
- Dedicated medical transcriptionist should be available for making the report because the clerks not only have to issue requisition number but also answer patients who check for their reports, they have to manually enter all entries in register along with other details of the patient.

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