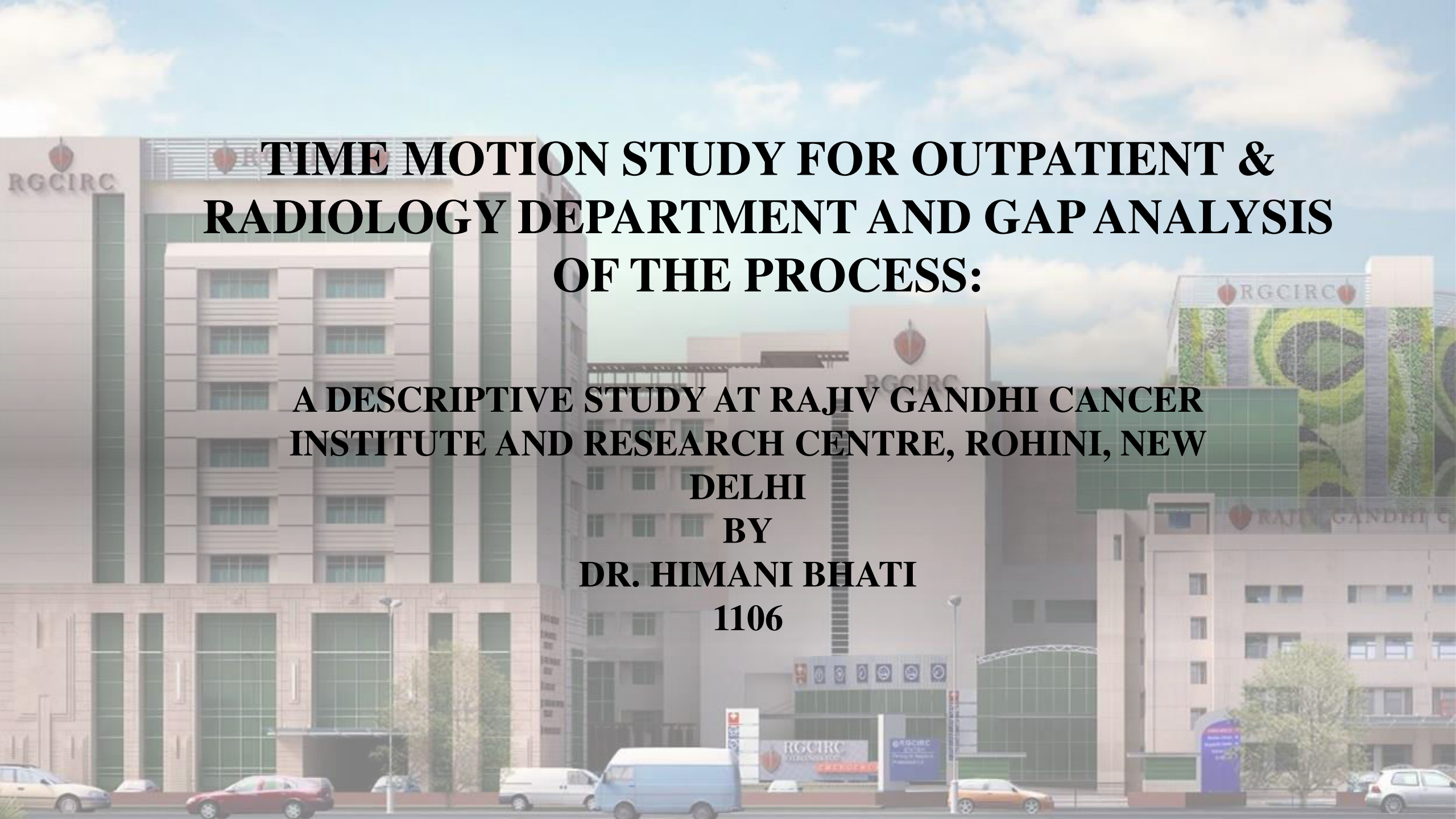




TIME MOTION STUDY FOR OUTPATIENT & RADIOLOGY DEPARTMENT AND GAP ANALYSIS OF THE PROCESS:

**A DESCRIPTIVE STUDY AT RAJIV GANDHI CANCER
INSTITUTE AND RESEARCH CENTRE, ROHINI, NEW
DELHI**

**BY
DR. HIMANI BHATI
1106**

About Organization

- Name: Rajiv Gandhi Cancer Institute and Research Centre
- Type: “Not for Profit”, Hospital.
- Established in 1996
- Branches: Rohini west & Niti Bagh
- Capacity: 500 beds with 51 Bedded surgical ICU, 21 bedded Medical ICU and 22 bedded Bone Marrow Transplant



Vision, Mission & Values

- **VISION**

To Provide Affordable Oncological Care Of International Standard And Help To Eliminate Cancer From India Through Research, Education, Prevention & Patient Care.

- **MISSION**

To be the premier cancer care provider in India and be the preferred choice of Patients, Care Givers, Faculty and Students.
By Offering comprehensive services at an affordable price.
And excellence of our personnel leveraging best technology.

- **VALUES**

We hold our patients in high esteem and work with ethics and compassion.
We care and function with mutual respect, trust and transparency.
We deliver accurate diagnosis, correct advice and effective treatment.

Objective of Study



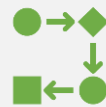
To analyze the Time motion study at OPD.



To analyze the Time motion study at Radiology department(Imaging Services).



To perform the gap analysis of both the departments.



To provide ways to overcome challenges causing gaps in the process flow.

About the Study

- Type: Descriptive, cross-sectional & quantitative study
- Area: Outpatient department & Radiology Department of RGCI & RC
- Sample Size: 104 for OPD(out of which 88 are New OPDs & 16 are Follow-up patients.)
112 for Radiology Department
- Sampling Technique: Simple Random sampling
- Duration: 11th April to 24th June
- Tools and techniques: Checklist, MS-Excel, MS-word & Digital watch.

Methodology



Using a random sampling technique, about 104 & 112 patients were selected for the time-motion study (TMS)



Then they are accompanied using checklist to collect data regarding the processes at different levels.



Data entry and analysis were done using Microsoft Excel 2010.



Percentages and proportions were calculated for descriptive statistics.



For TMS, time was noted with the help of a digital watch and detected at each station by an observer with the help of the same watch.



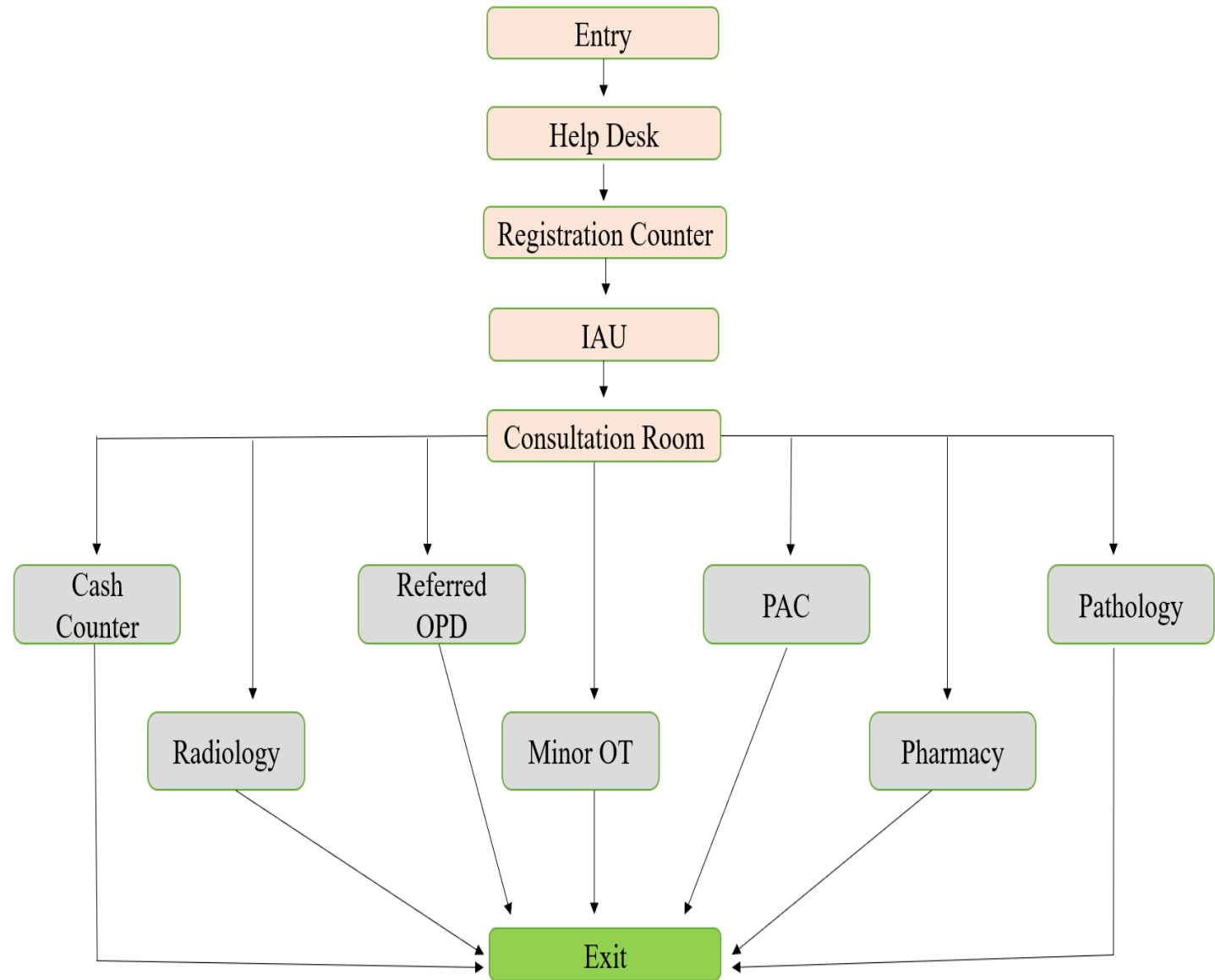
The time difference was calculated and analyzed for every station.

A close-up of a doctor's torso and hand holding a blue stethoscope. The doctor is wearing a white lab coat over a patterned tie and a grey shirt cuff. The background is a blurred hospital outpatient department with people sitting on chairs.

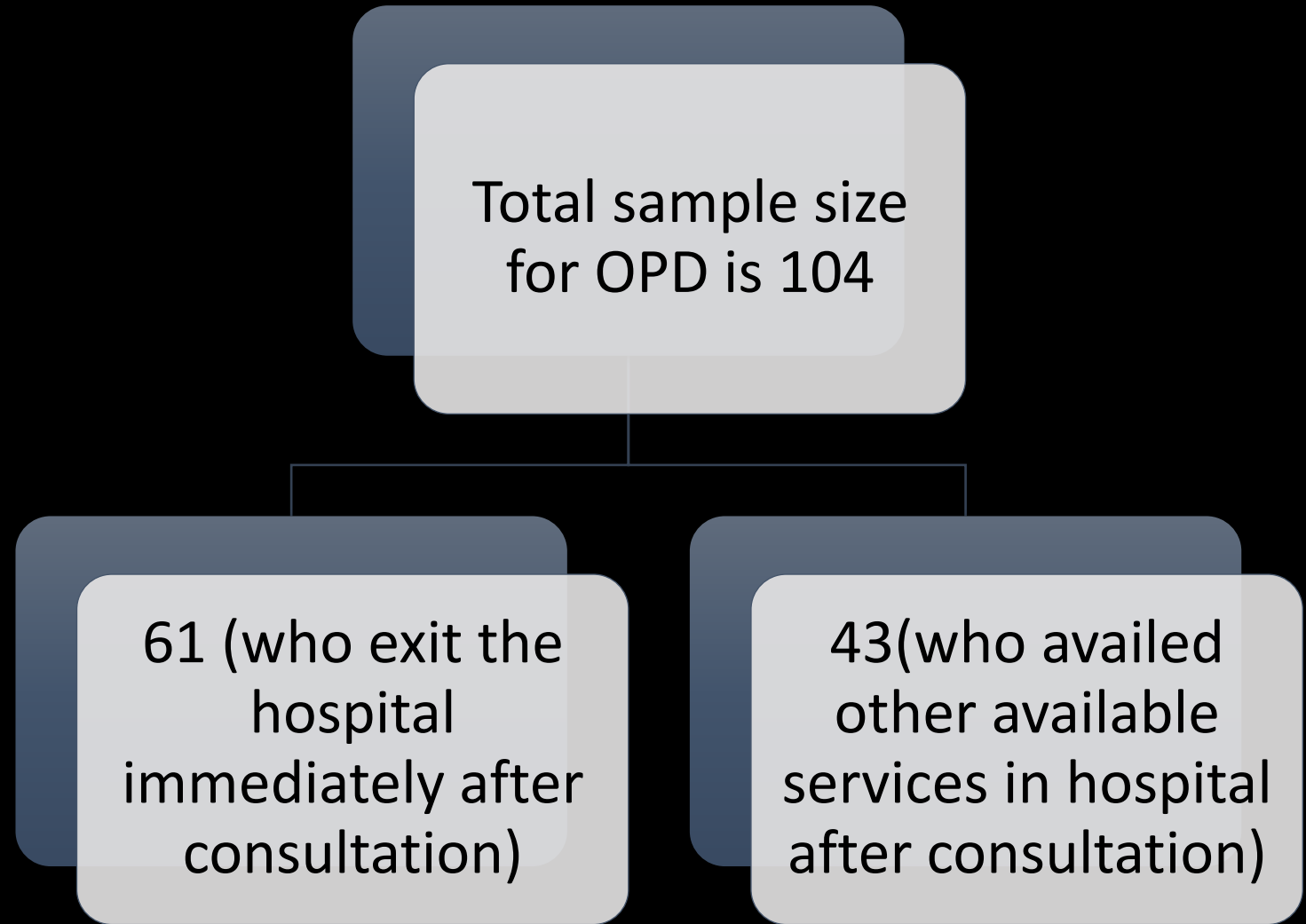
OPD

OUTPATIENT DEPARTMENT

Process Flow

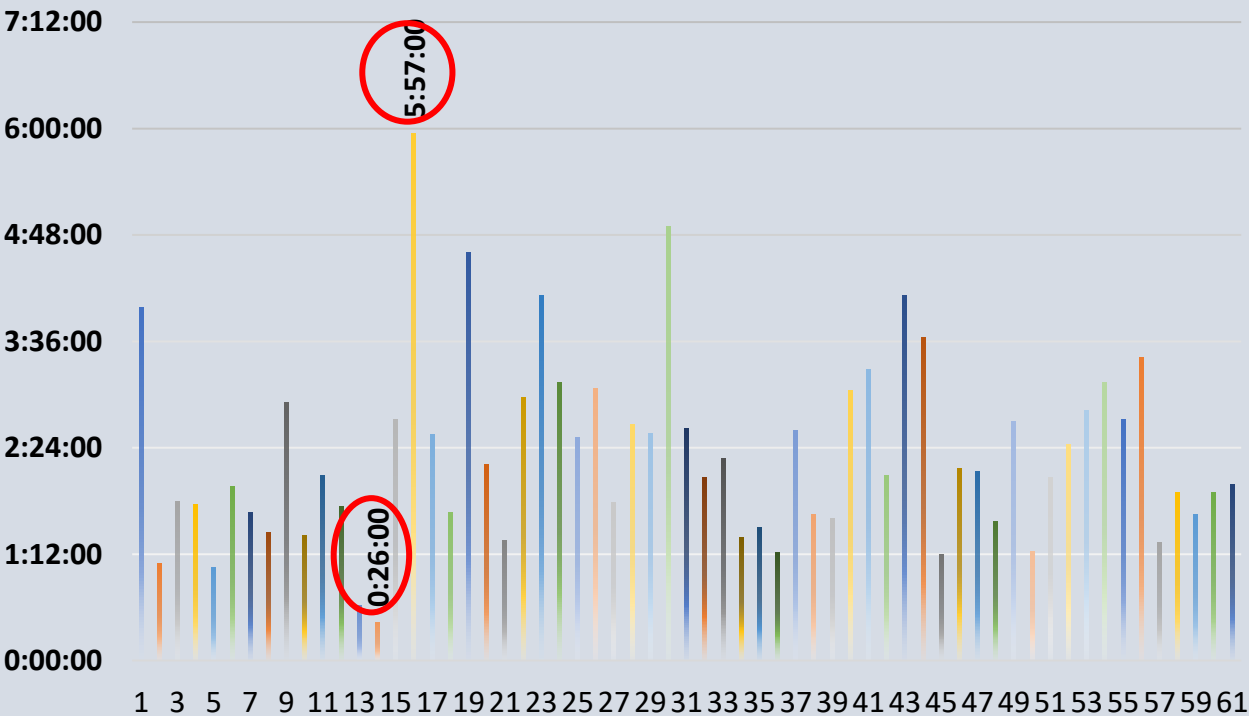


Sample Size



Total TAT - Help desk to Consultation V/s Help desk to Respective Department

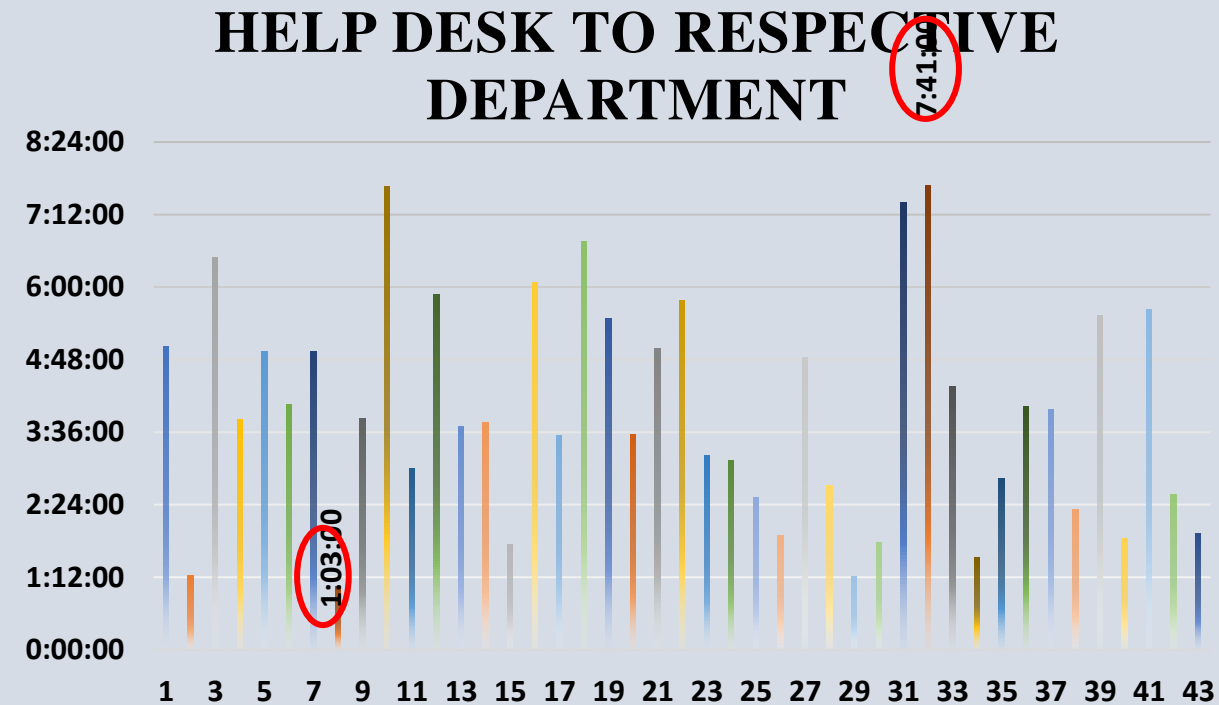
HELP DESK TO CONSULTATION



- **Average TAT: 02:19:52.**

- **Possible Reasons for high Peaks:** Patient condition was Critical, Admitted to Emergency.

HELP DESK TO RESPECTIVE DEPARTMENT



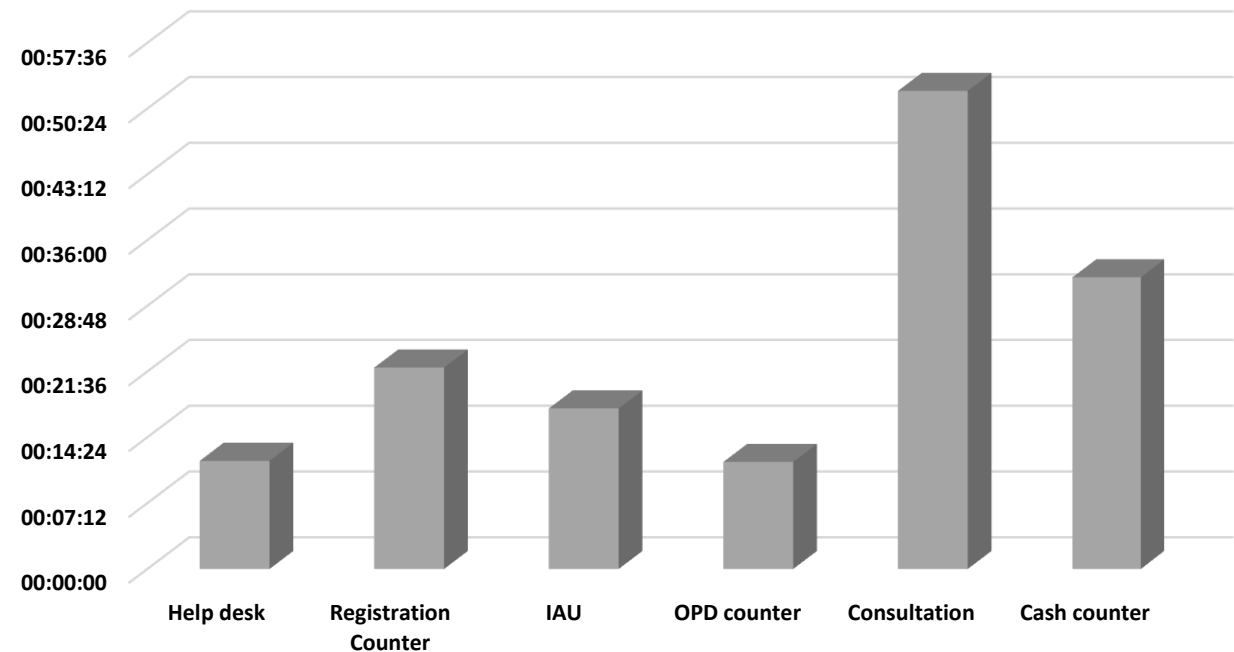
- **Average TAT: 03:57:28.**

- **Possible Reasons for high Peaks:** Patient made to wait for 2 hours after 3:05 pm at the ECG/PFT UNIT to perform TMT test on empty stomach.
- The test had to be done on empty stomach this was not informed to the patient in advance and hence resulted in excessive waiting time.

TAT OF EACH PROCESS IN OPD :

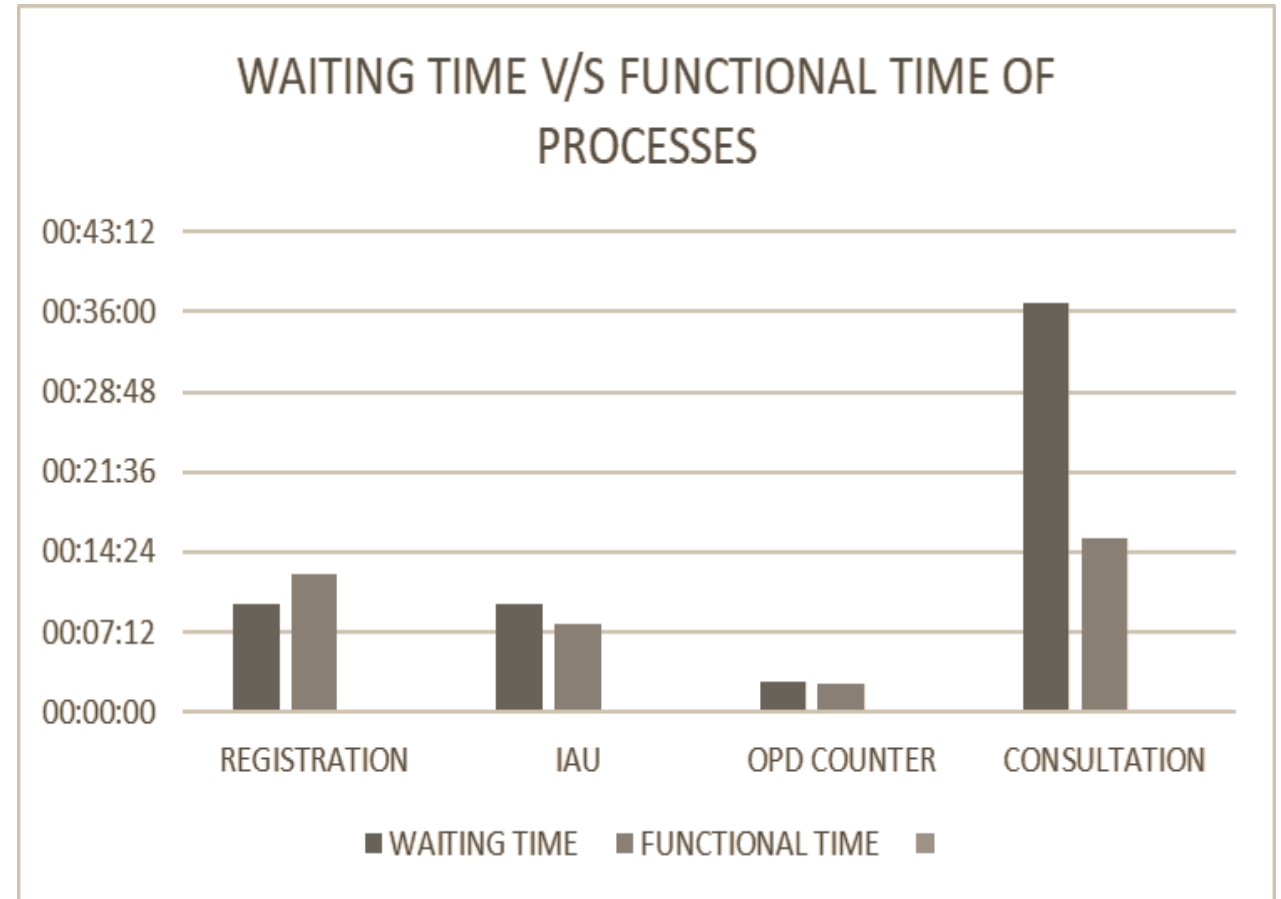
Total TAT	
Process name	Average time taken
Help desk	0:11:49
Registration Counter	0:22:02
IAU	0:17:33
OPD counter	0:11:42
Consultation	0:52:20
Cash counter	0:31:55

Average time taken for each process



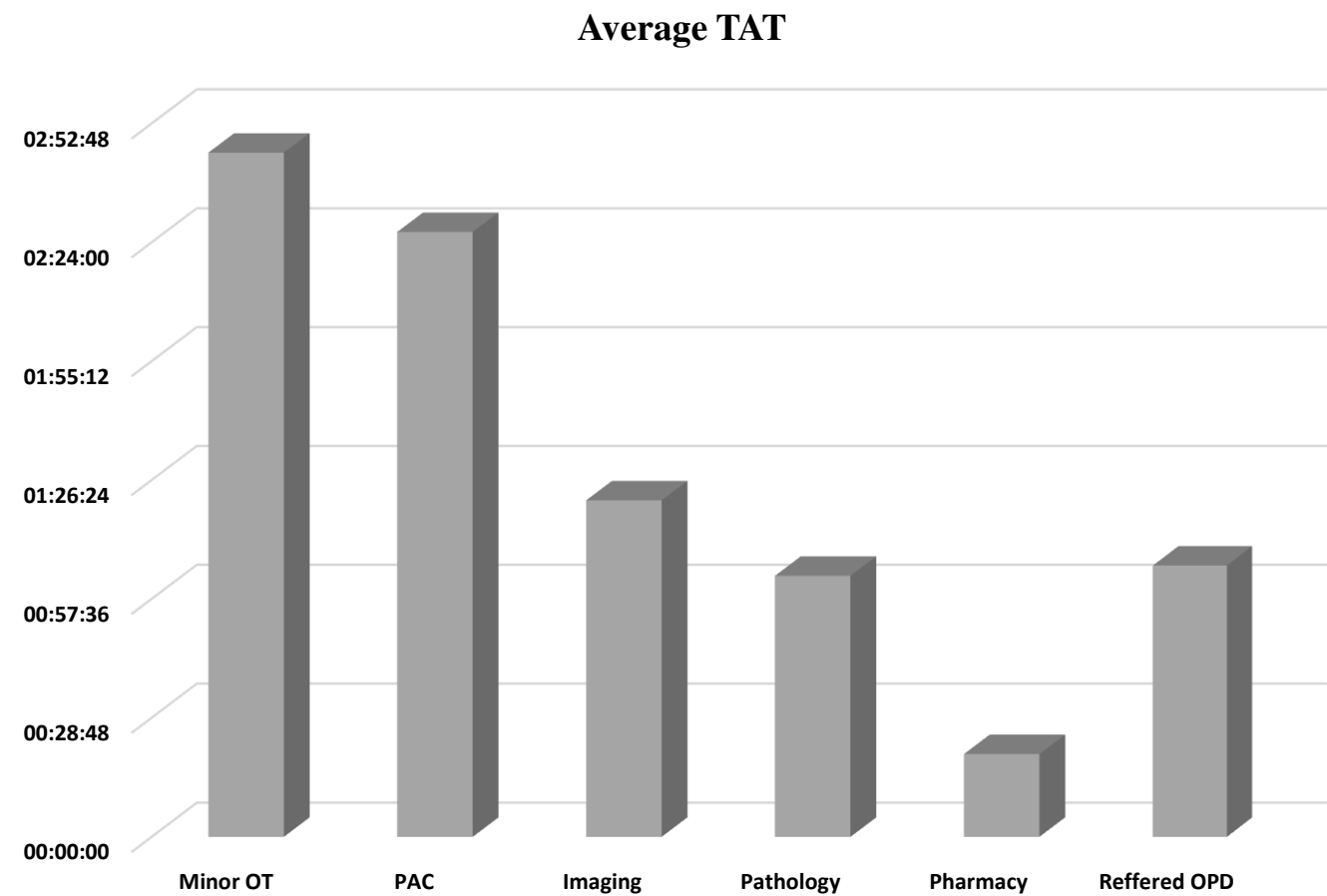
DIFFERENCE BETWEEN WAITING TIME AND FUNCTIONAL TIME:

PROCESS	WAITING TIME	FUNCTIONAL TIME
REGISTRATION	0:09:39	0:12:23
IAU	0:09:42	0:07:51
OPD COUNTER	0:02:49	0:02:35
CONSULTATION	0:36:45	0:15:35

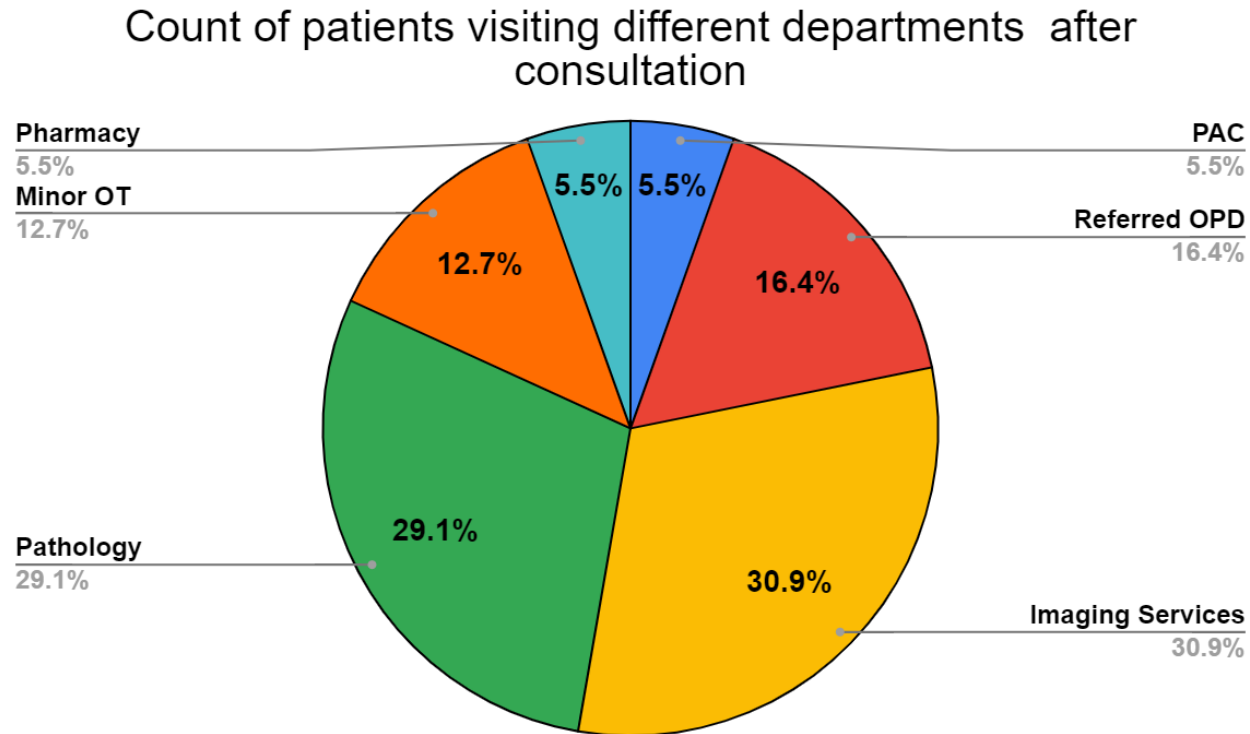


AVERAGE TAT OF DEPARTMENTS VISITED AFTER CONSULTATION

Department	Average TAT
Minor OT	2:45:43
PAC	2:26:30
Imaging	1:21:28
Pathology	1:03:11
Pharmacy	0:20:00
Reffered OPD	1:05:40



Scenario after consultation

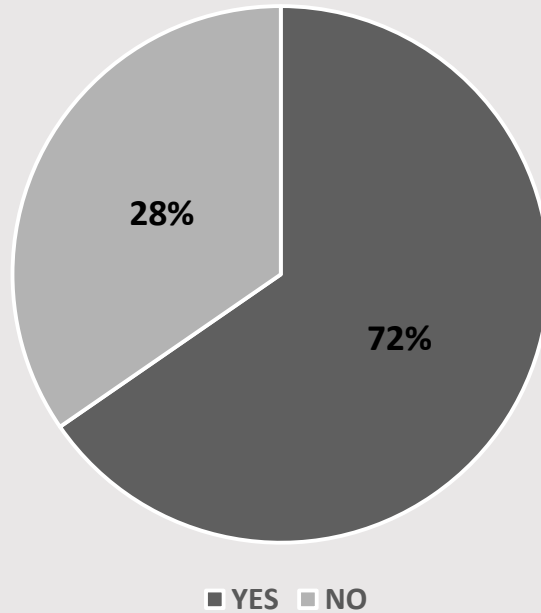


Interpretation:

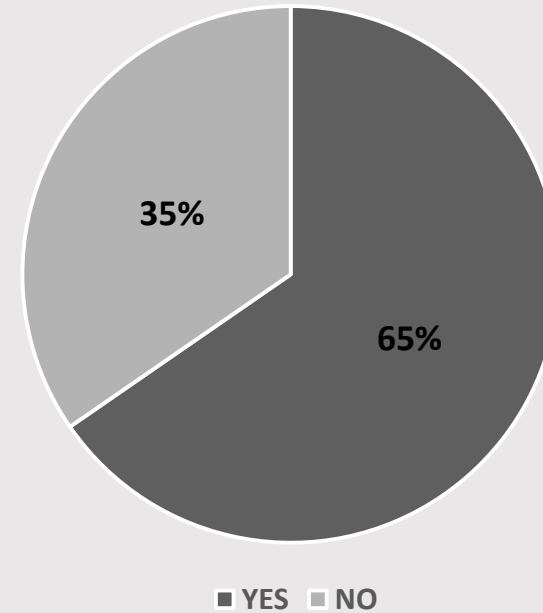
- The graph shows the patients load in different departments after consultation the maximum load is in the imaging services that is 30.1% this means out of 43 patients 17 visits imaging services followed by pathology.
- However only 7 patients visited the minor OT, still the average process time of minor OT is around 2 hours 45 minutes.
- Reason behind this is mostly unavailability of doctors,

CHALLENGES FACED BY PATIENT

**Percentage of patients
Seeking assistance**



**Percentage of People Seeking
directional Guidance**





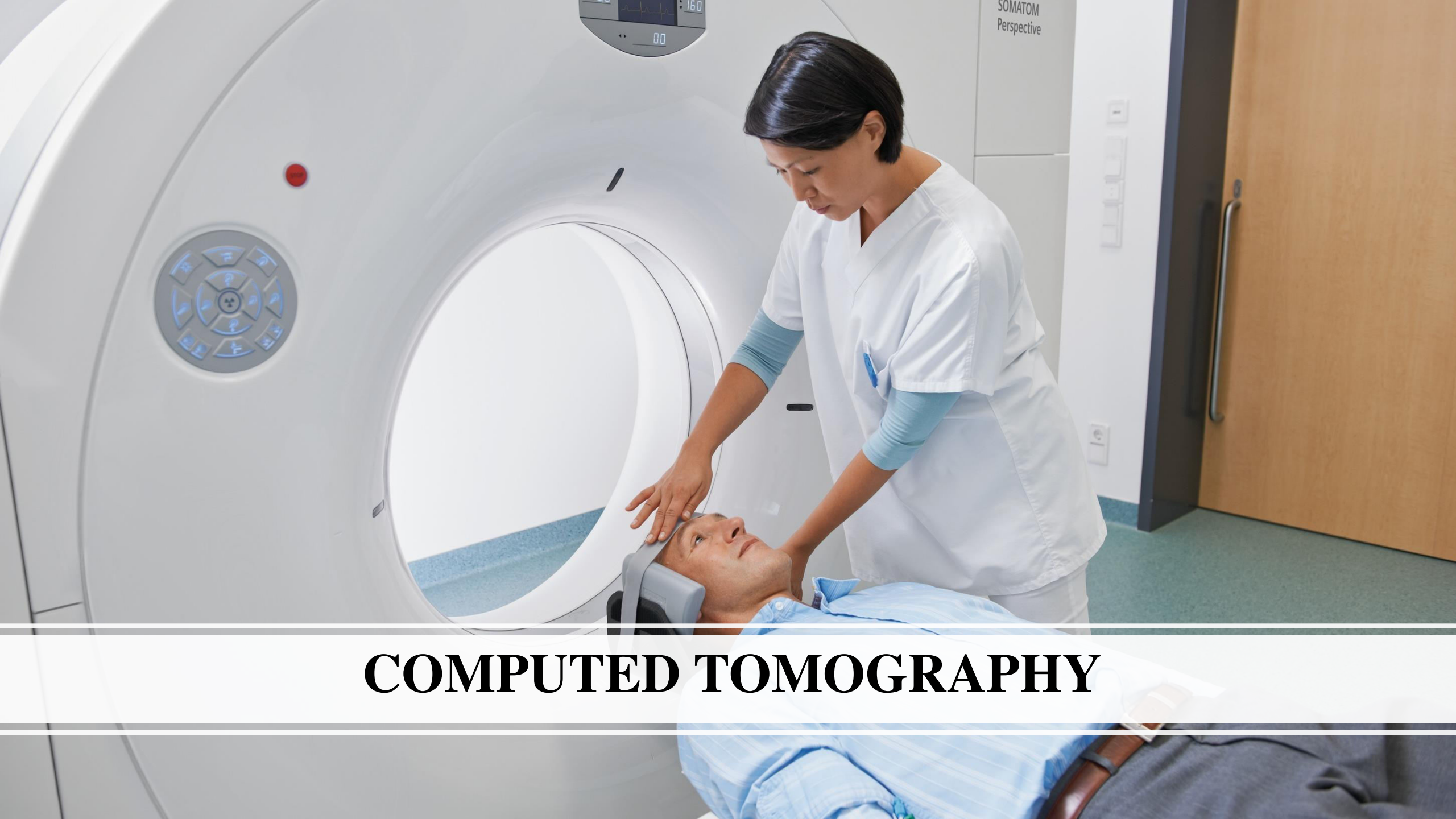
RADIOLOGY DEPARTMENT



Sample Size

- Using a convenient sampling technique, a total of 112 patients were selected for the time motion study.
- Secondary data was collected for the purpose of analysis

Process	No. of cases
CT scan	24
Mammography	5
X ray	19
USG	33
MRI	31
Total	112



COMPUTED TOMOGRAPHY

**PROCESS
FLOW OF
CT SCAN:**

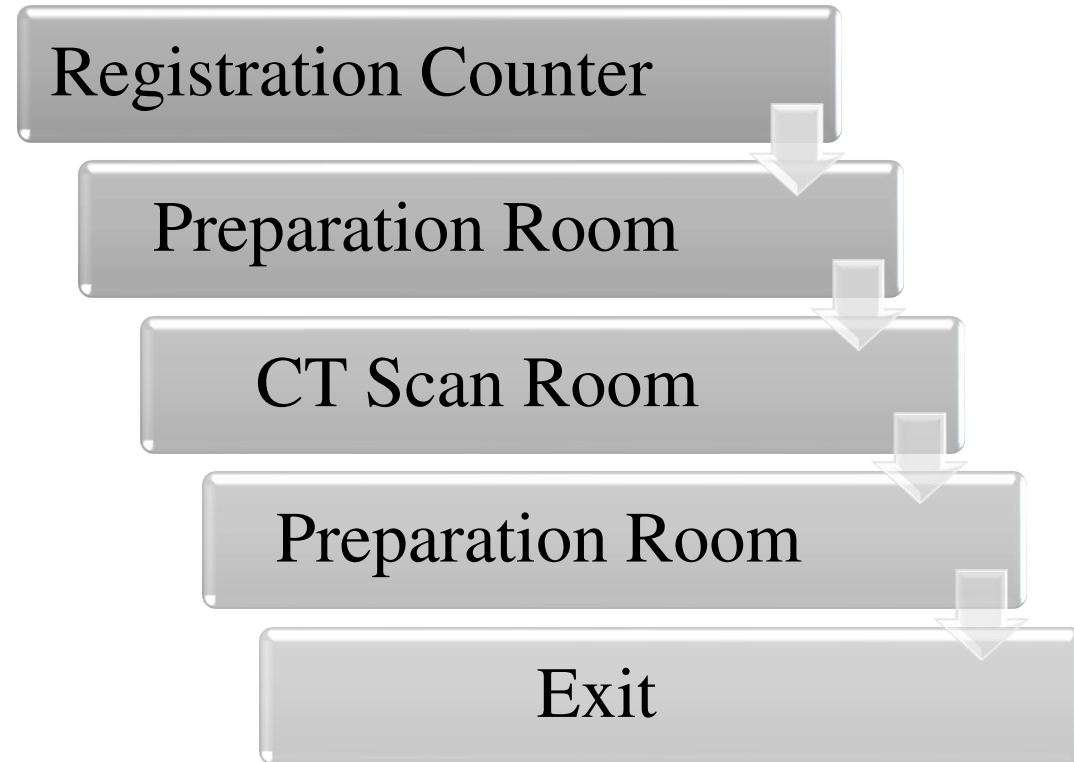
Registration Counter

Preparation Room

CT Scan Room

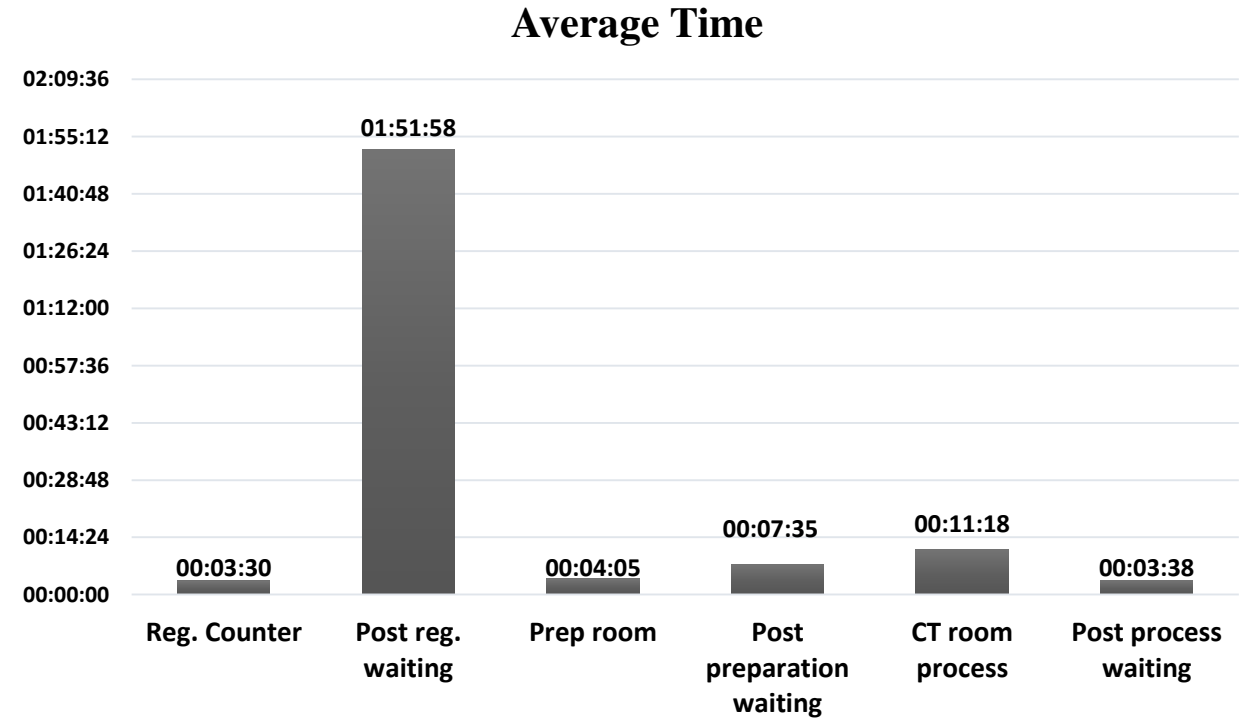
Preparation Room

Exit



AVERAGE TIME TAKEN FOR THE PROCESS OF CT SCAN

Processes	Average Time(hh:mm:ss)
Reg. Counter	0:03:30
Post reg. waiting	1:51:58
Prep room	0:04:05
Post preparation waiting	0:07:35
CT room process	0:11:18
Post process waiting	0:03:38
Total TAT	2:22:04

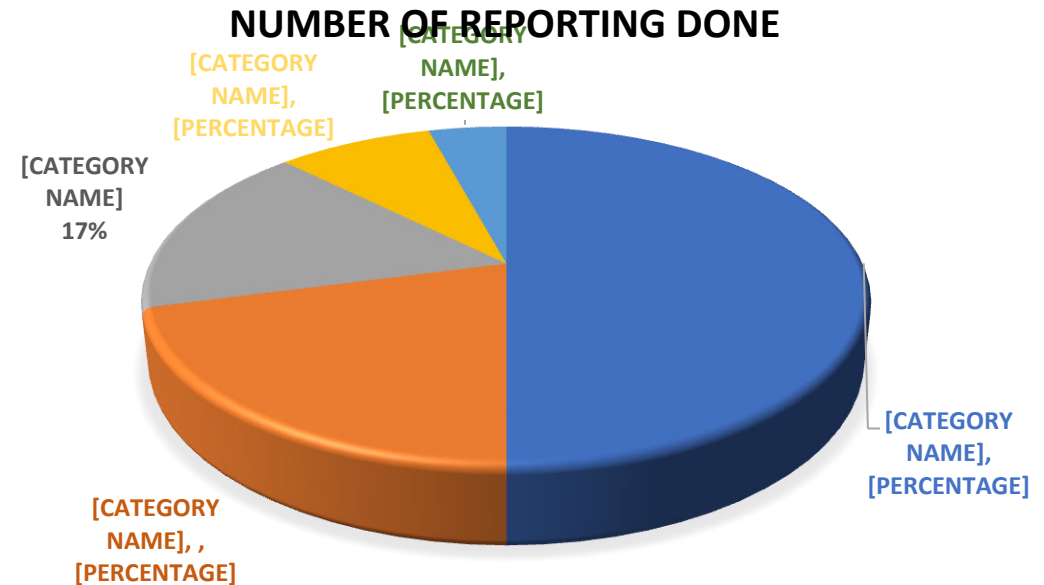


- Possible reason for long waiting time:- improper scheduling of tedious processes such as CT and CT guided biopsy.
- Patient does not come empty stomach and hence has to wait.

REPORTING OF CT SCAN

Level One Reporting (Initial Reading)

Radiologist	NUMBER OF REPORTING DONE
Dr. ANSHUMAN(JR)	12
Dr. NADHEER(JR)	5
Dr. MAHENDRA(SR)	4
Dr. RAJIV KAPOOR(SR)	2
Dr. VIKAS REDDY(JR)	1

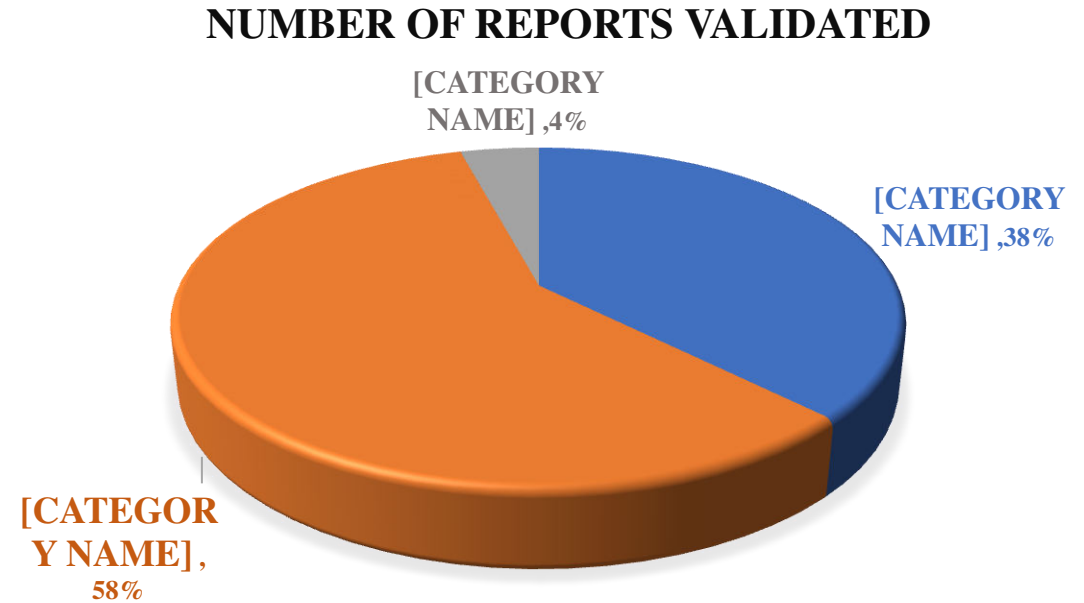


- Time taken for Initial reading of a single CT scan is 20min to 40 min.
- 75% of the cases are reported by just 3 junior radiologists.
- 25% of the cases are reported by senior radiologist clearly indicating a lack of junior radiologists to report the investigations.

*(Reporting's done are case specific and hence can take shorter or longer than the range mentioned)

Level 2 Reporting (Final validation of CT scans)

RADIOLOGIST	NUMBER OF REPORTS VALIDATED
Dr RAJIV KAPOOR	9
Dr KM MAHENDRA	14
Dr RAKESH	1

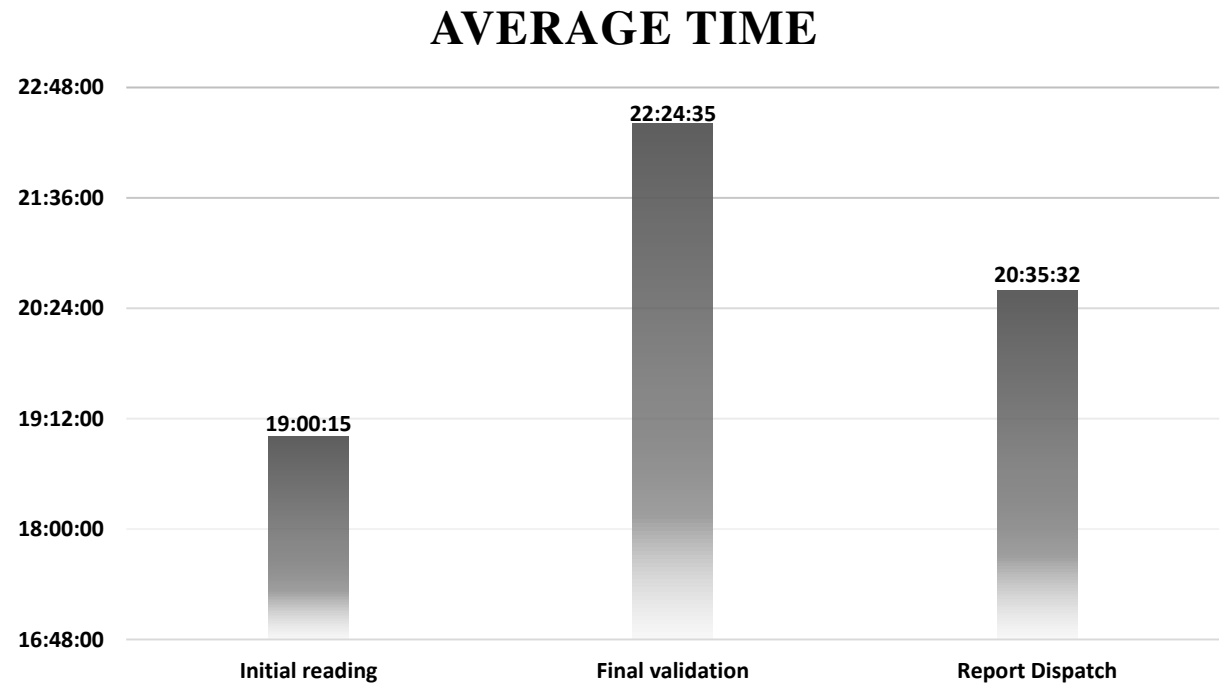


- Time taken to validate an Initially read CT scan is 10 min to 35 min.
- 58% of the cases are validated by a single radiologist indicating a need for effective utilization of manpower.

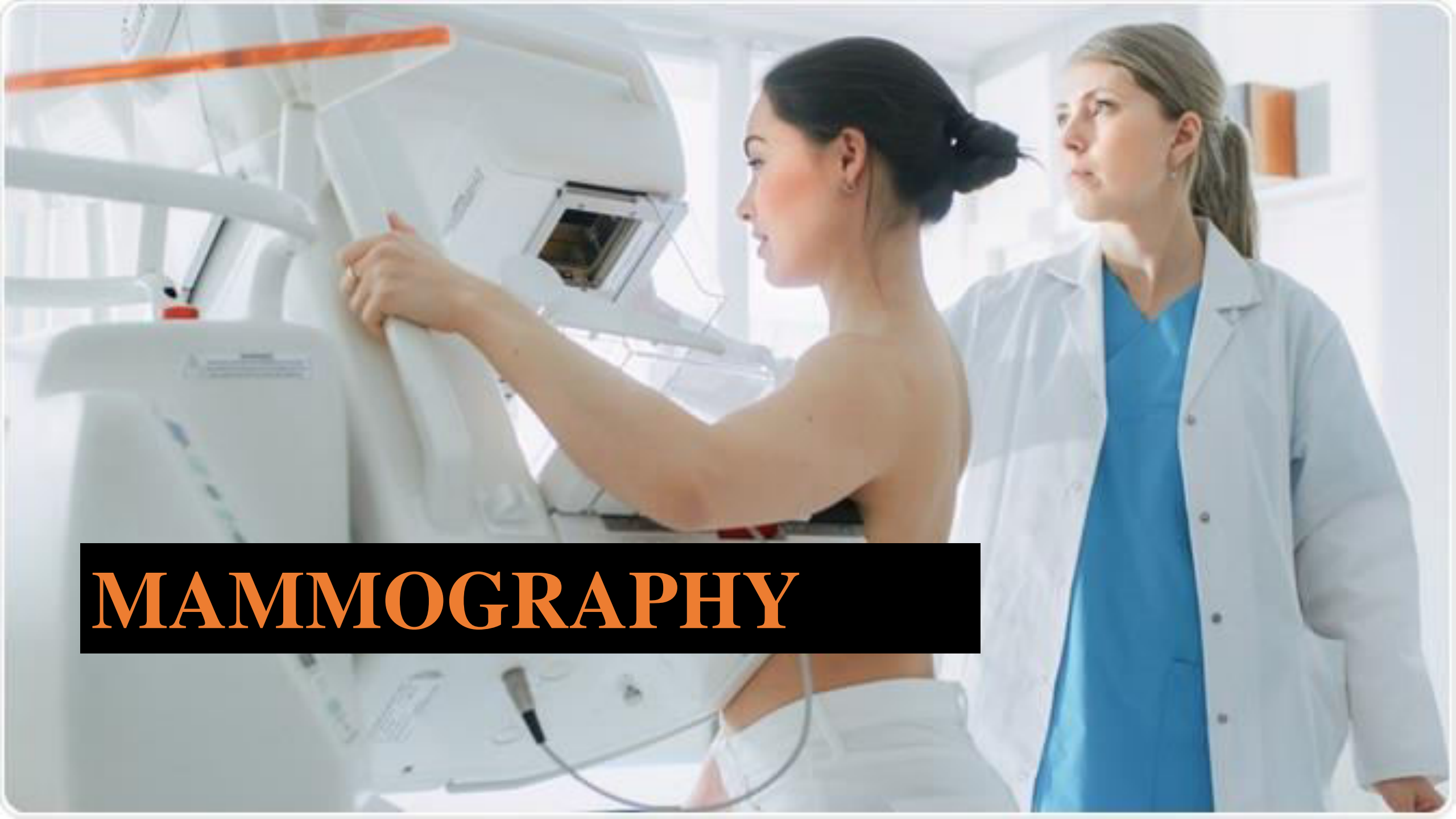
*(validation of approved reports are case-specific and hence can take shorter or longer than the range mentioned).

AVERAGE TIME TAKEN IN REPORTING AND DISPATCH OF CT SCAN

Process Name	Average Time (hh:mm:ss)
Initial reading (Level 1)	19:00:15 (Minimum 1:39 to Max.28:27)
Final validation (Level 2)	22:24:35 (Min.7:20 to Max. 44:17)
Report Dispatch	20:35:32 (Min. 2:32 to Max. 45:02)



- Average time taken between Initial reading and final Validation of CT scan is 3 hours 25 min

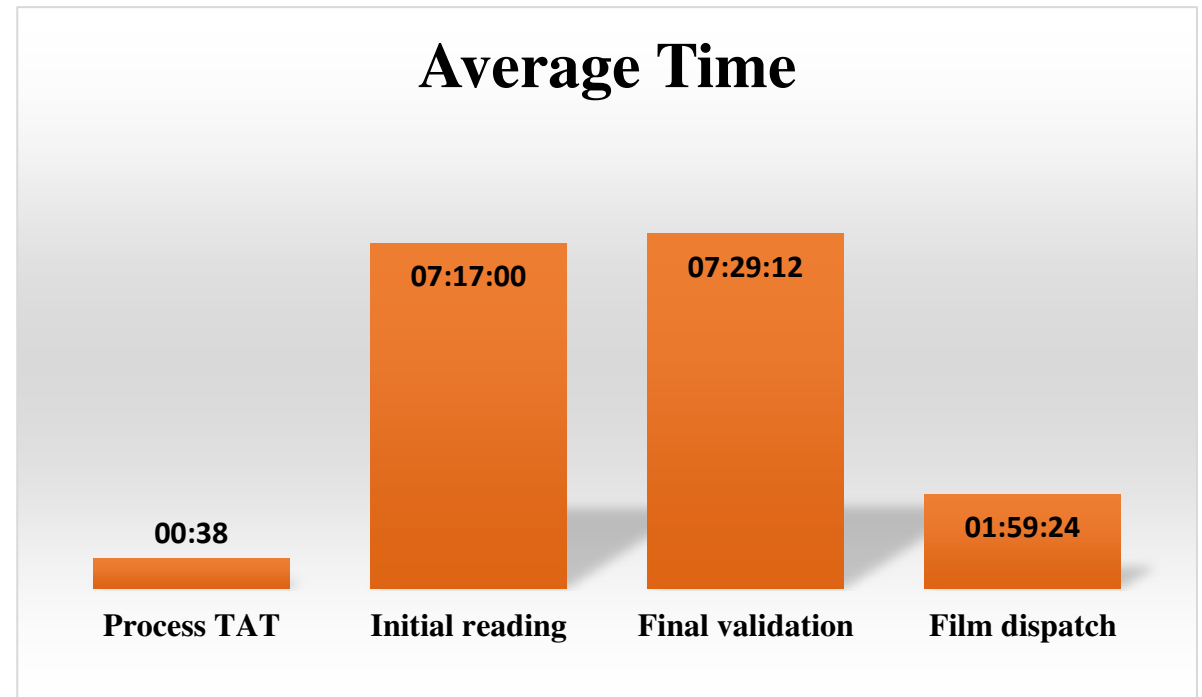


MAMMOGRAPHY

PROCESS OF MAMMOGRAPHY



PROCESSES	AVERAGE TIME (hh:mm:ss)
Reg. Counter	0:06:00
Waiting	0:23:36
Process	0:05:24
Waiting	0:02
TAT	0:38:00
Initial reading	7:17:00
Final validation	7:29:12
Film dispatch	1:59:24



REPORTING OF MAMMOGRAM

Level 1 (Initial reading)

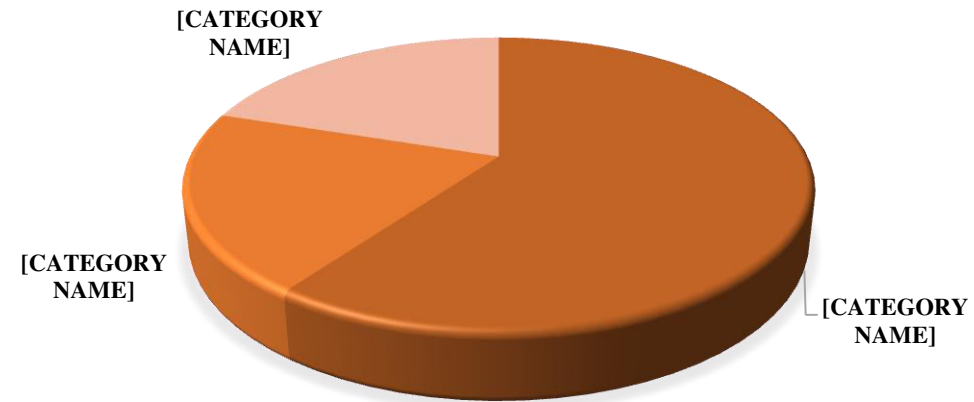
Radiologist	Number of reporting done
Dr. Nadheer (JR)	3
Dr. Ramesh (SR)	1
Dr. Rajeev Kapoor (SR)	1

Level 2 (Final validation) of all 5 cases done by Dr Rajeev

- Time taken for Initial reading of a single mammography film is 10min to 15min.
- Time taken for validation of a single mammography film is 5min to 10min.
- 40% of the cases reported (level1) by senior radiologist and 60% are reported(level 1) by a single junior radiologist.

*(reporting of a mammography film is entirely case specific and hence can take longer or shorter than the given range.)

NUMBER OF REPORTING DONE



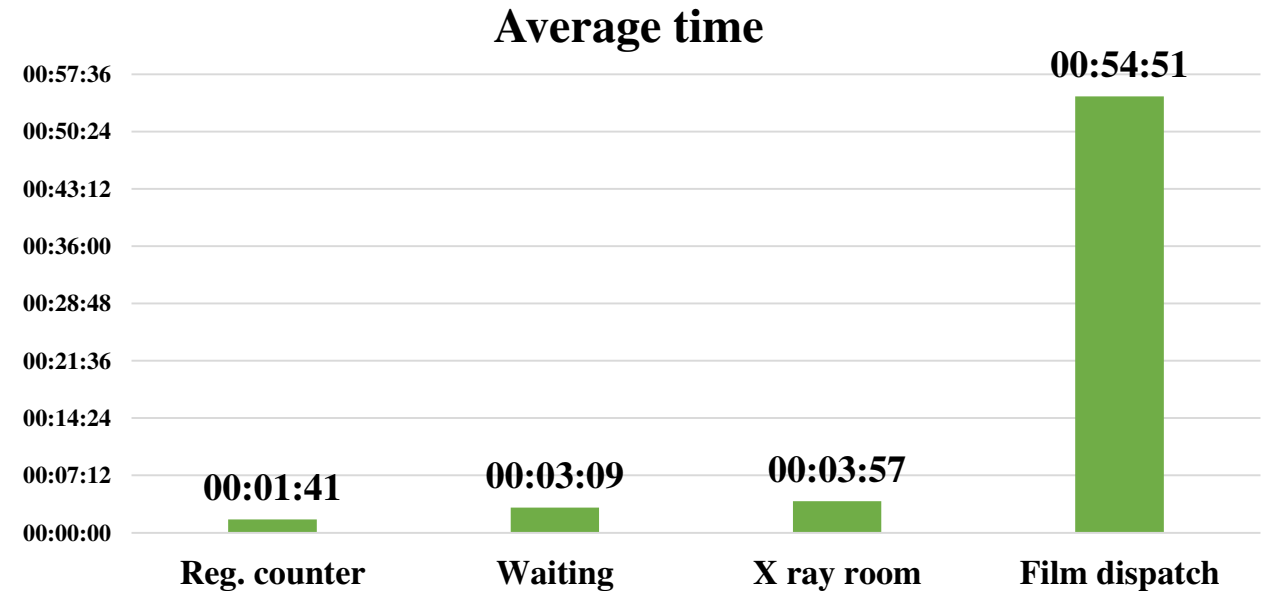


X-RAY

PROCESS OF X-RAY



Processes	Average time
Reg. counter	0:01:41
Waiting	0:03:09
X ray room	0:03:57
Film dispatch	0:54:51
TAT	1:03:38



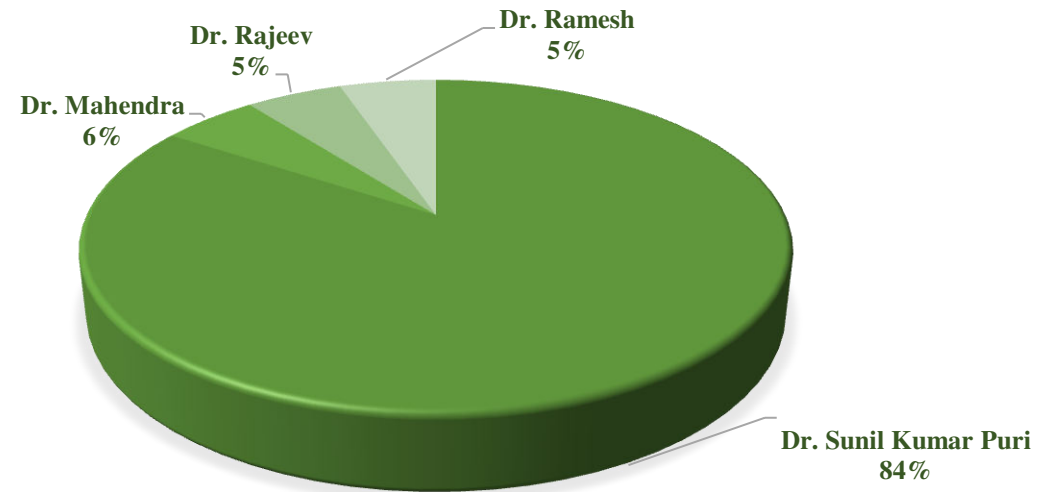
- Average time taken between process and dispatch of Xray film is 54 min indicating a flaw in dispatch of X ray films and requirement to decentralize the dispatch counter.

Reporting of X Ray films

Level 1 (Initial reading) and Level 2 (Final validation) are done at the same time.

Radiologist	No. of Xray Reported
Dr. Sunil Kumar Puri	16
Dr. Mahendra	1
Dr. Rajeev	1
Dr. Ramesh	1
Total	19

WORK LOAD ON RADIOLOGISTS



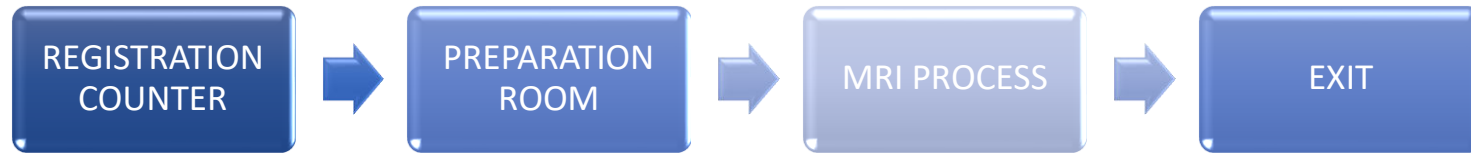
- Time taken to validate a single X-ray is 5min to 7min.
- Average time taken to validate X-ray film after the process of an X-ray is done is 2 hours.
- 84% of the cases are reported and validated by a single senior radiologist.

* Validation of X-ray is a case-specific process hence it can take longer or shorter than the above-mentioned range.



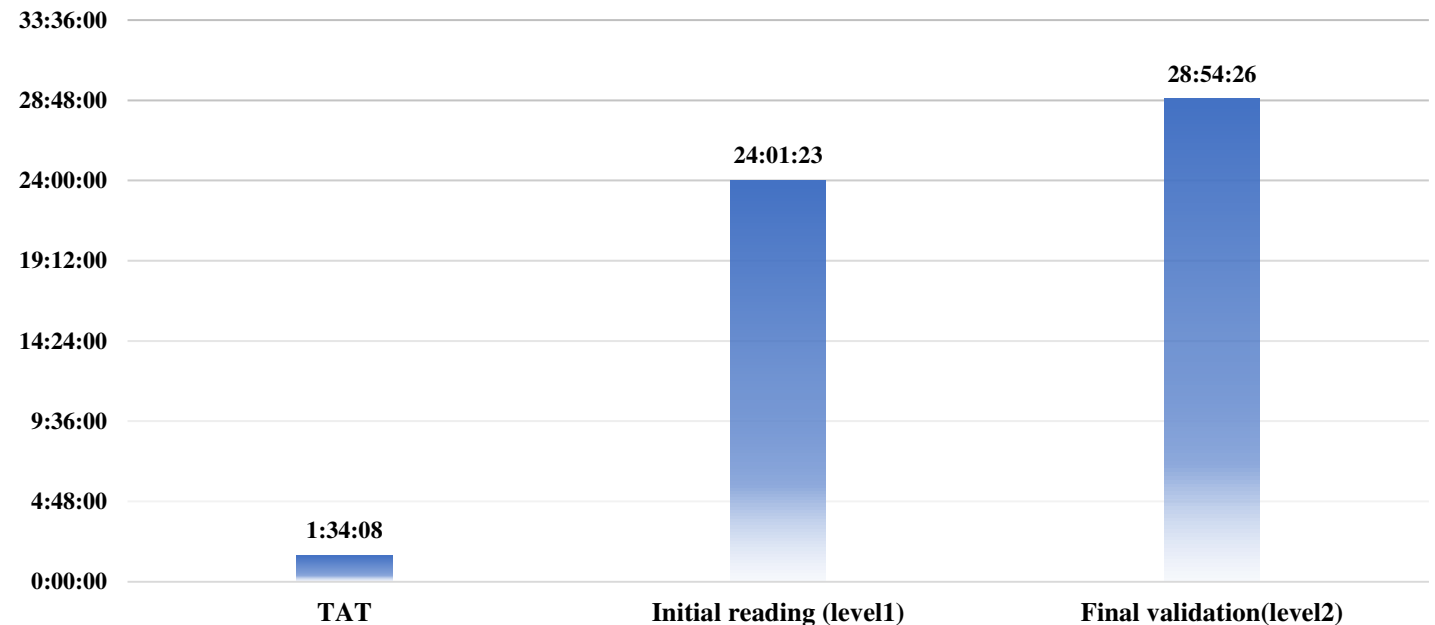
MAGNETIC RESONANCE IMAGING

PROCESS OF MRI



Processes	Average time
Waiting time	00:31:04
Process duration	01:03:04
TAT	1:34:08
Initial reading (level 1)	24:01:23
Final Validation(level2)	28:54:23

AVERAGE TIME



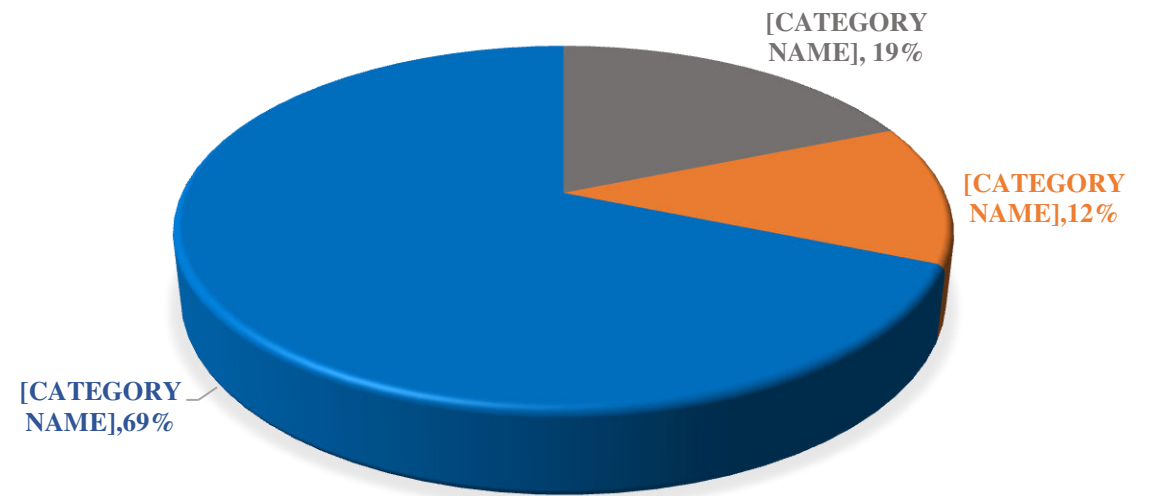
- Time taken between Initial reading (level1) and validation(level2) is 4 hours 53min.
- Average time taken for validation of an MRI after the process is done is more than 24 hours indicating a slight delay in the validation of reports.

REPORTING OF MRI

LEVEL 1 (INITIAL READING)

Radiologist	No. of Initial readings (level1)
Dr. Jeevitesh Khoda (SR)	6
Dr. Rakesh Oberoi (SR)	4
Junior Doctor	22

NO. OF INITIAL READINGS DONE (LEVEL1)

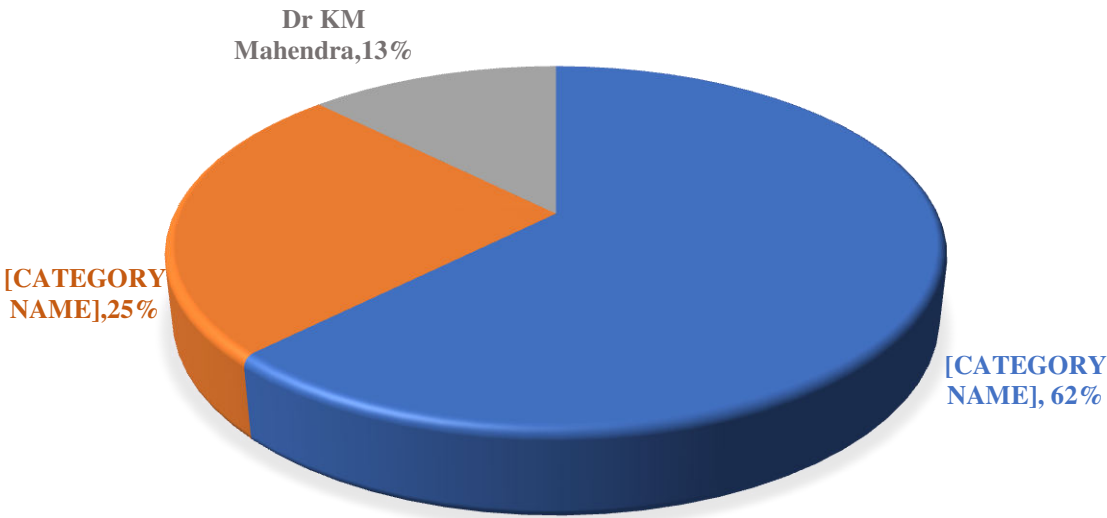


- 31% of the reports are directly reported(level1) by senior radiologists.
- Possible reason- only 2 juniors are posted in dept, which are less as compared to the patient flow.
- Time taken for initial reading of a single MRI is 25min to 65min.

LEVEL 2 (FINAL VALIDATION)

Radiologist	No. of final validation(level2)
Dr. Rakesh Oberoi	20
Dr. Jeevitesh Khoda	8
Dr. K.M. Mahendra	4

NO. OF FINAL VALIDATION DONE (LEVEL2)



- Dr. Rakesh Oberoi is the senior radiologist in the department but due to high patient footfall, cases are diverted to other senior radiologists also.
- Time taken to validate a single MRI is 5min to 15min.

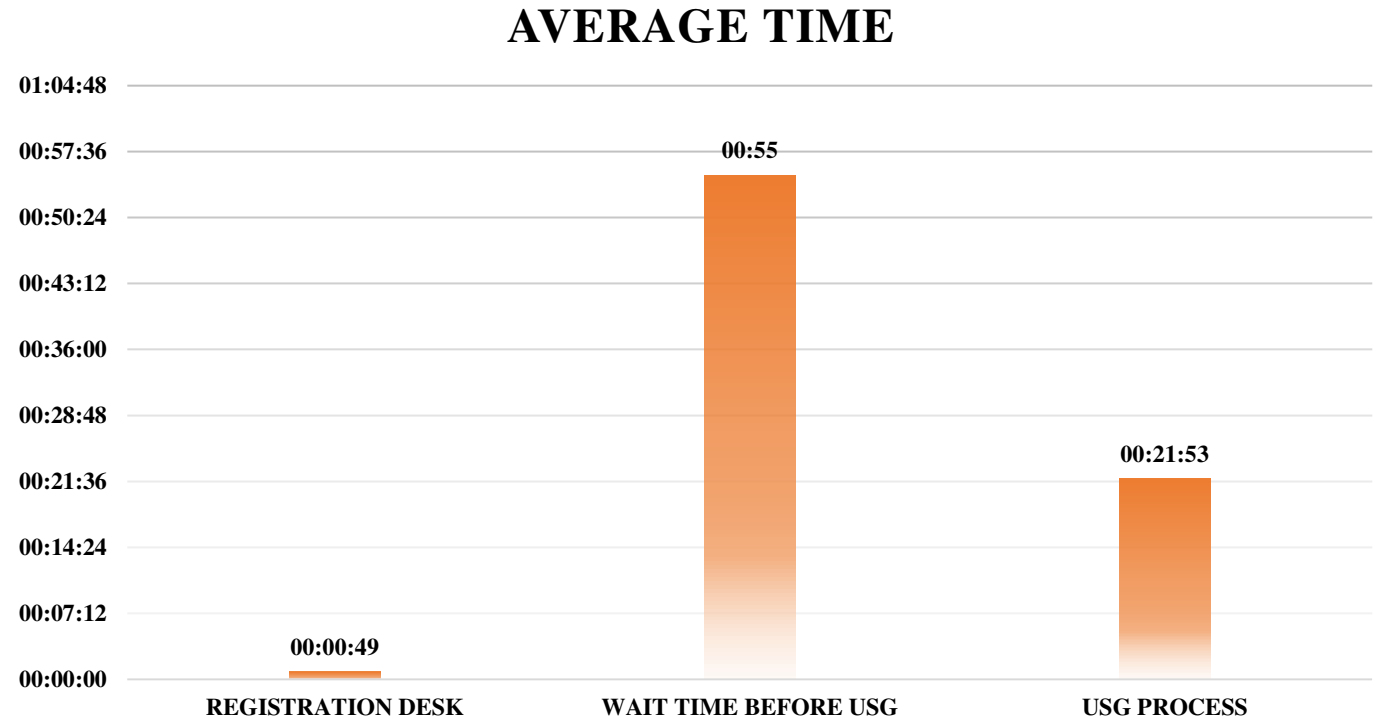


ULTRA SONOGRAPHY

PROCESS OF USG



PROCESSES	AVERAGE TIME
Registration Desk	0:00:49
Waiting time before USG	0:55
USG Process	0:21:53
Waiting time after USG	0:05:35
Validation of USG	8:45:27
TAT	1:24:38



Long waiting time prior to the process of USG is observed , probable reason for this could be:-

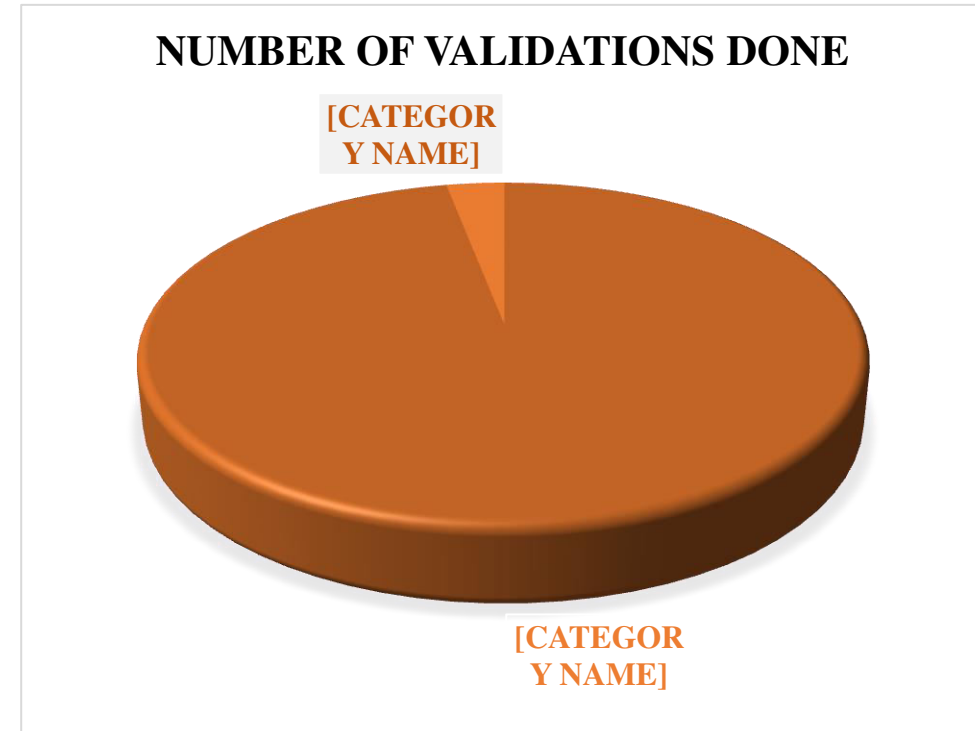
- Shortage of radiologist to perform the process of USG(only 1 radiologist is seen posted).
- Patient foot fall is more.

REPORTING OF USG

Level 1 or initial reading of all 33 cases of USG were done by Dr. Likith.

Level 2 validation of USG

RADIOLOGIST	NUMBER
Dr.RAMESH	32
Dr. VIKAS	1



- Time taken for initial reading of a single USG is 20 to 35 min.
- Time taken to validate a USG is 10 to 20 min.
- Its is observed that all USG cases are read initialy by a single radiologist and 93% of the cases are validated by a single senior radiologist indicating a shortage of radiologist.

*(reporting's done are entirely case specific and hence it could take longer or shorter than mentioned range.)

CHALLENGES: OUTPATIENT DEPARTMENT

HOSPITAL AMBIENCE

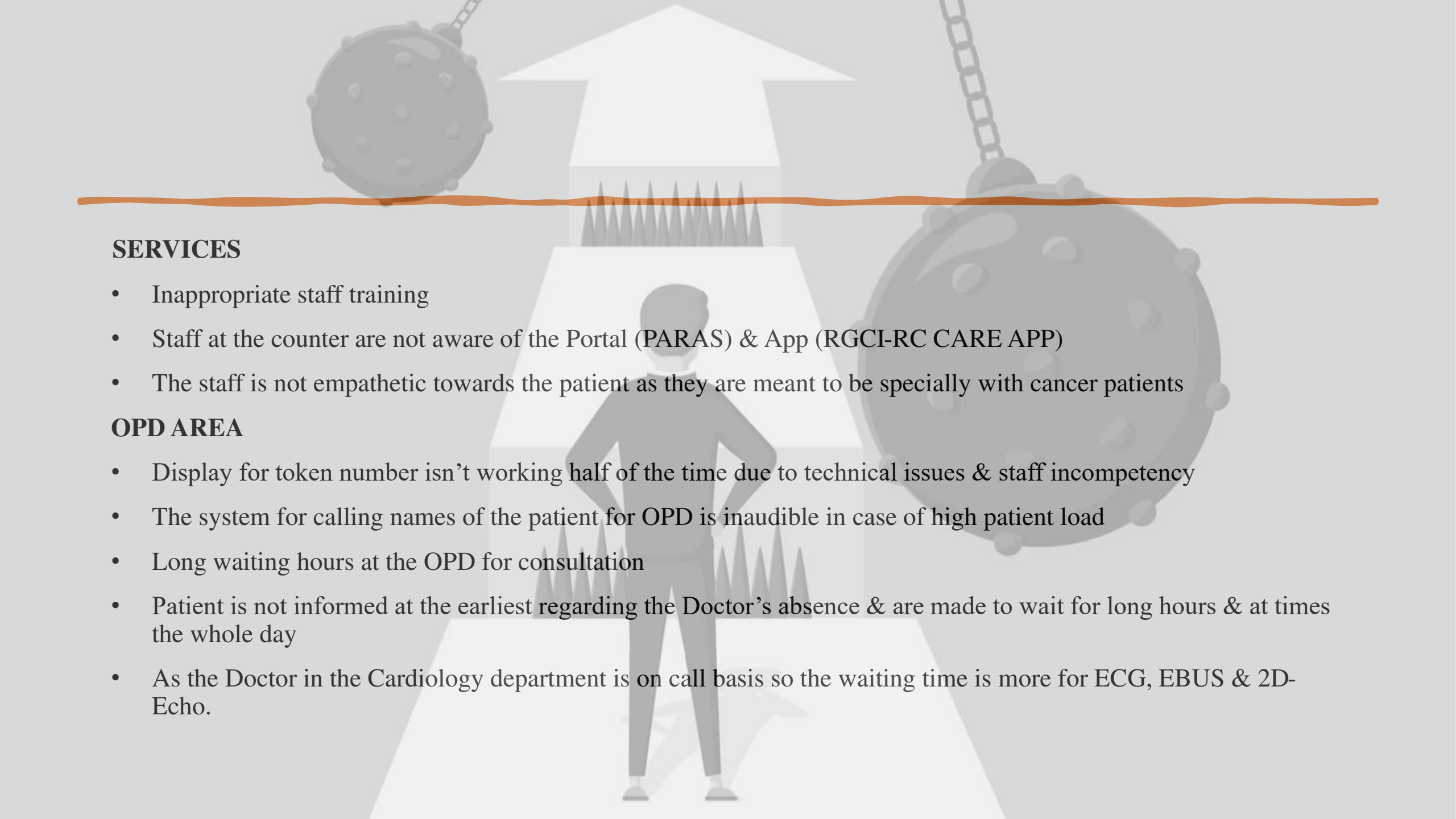
- Sanitization protocol is not being followed at the entrance appropriately.

HELP DESK

- Help desk not visible
- Lack of manpower at the help desk- There are only 2 people at the help desk which are not sufficient when the patient load is more.

REGISTRATION AREA

- Registration process is time consuming & the patients are made to wait at the OPD waiting area & then called once the file is ready,
- The scanning process of documents is slow & at times the IT service crashes due to heavy load.
- There is no provision for cost estimation for patients prior to treatment
- Patients find difficulty in reaching to referred OPDs due to inadequate signages & less manpower for guidance (GDA staff)



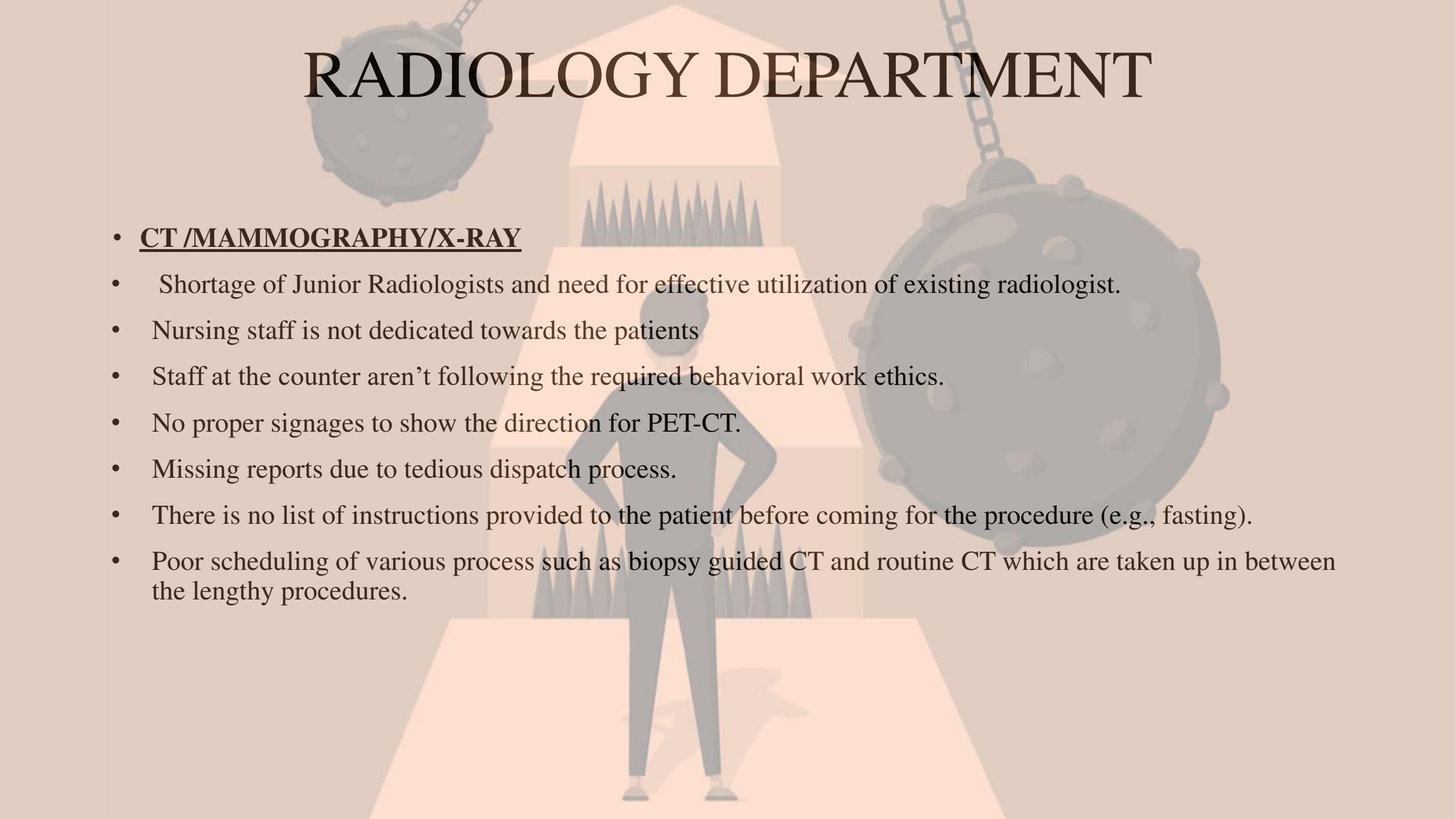
SERVICES

- Inappropriate staff training
- Staff at the counter are not aware of the Portal (PARAS) & App (RGCI-RC CARE APP)
- The staff is not empathetic towards the patient as they are meant to be specially with cancer patients

OPD AREA

- Display for token number isn't working half of the time due to technical issues & staff incompetency
- The system for calling names of the patient for OPD is inaudible in case of high patient load
- Long waiting hours at the OPD for consultation
- Patient is not informed at the earliest regarding the Doctor's absence & are made to wait for long hours & at times the whole day
- As the Doctor in the Cardiology department is on call basis so the waiting time is more for ECG, EBUS & 2D-Echo.

RADIOLOGY DEPARTMENT



- **CT /MAMMOGRAPHY/X-RAY**

- Shortage of Junior Radiologists and need for effective utilization of existing radiologist.
- Nursing staff is not dedicated towards the patients
- Staff at the counter aren't following the required behavioral work ethics.
- No proper signages to show the direction for PET-CT.
- Missing reports due to tedious dispatch process.
- There is no list of instructions provided to the patient before coming for the procedure (e.g., fasting).
- Poor scheduling of various process such as biopsy guided CT and routine CT which are taken up in between the lengthy procedures.

- **MRI**

- Shortage of radiologists for reporting of MRI.
- Delayed reporting's of MRI.
- Usage of regional languages by the technician a matter of discomfort for patient.
-

- **USG**

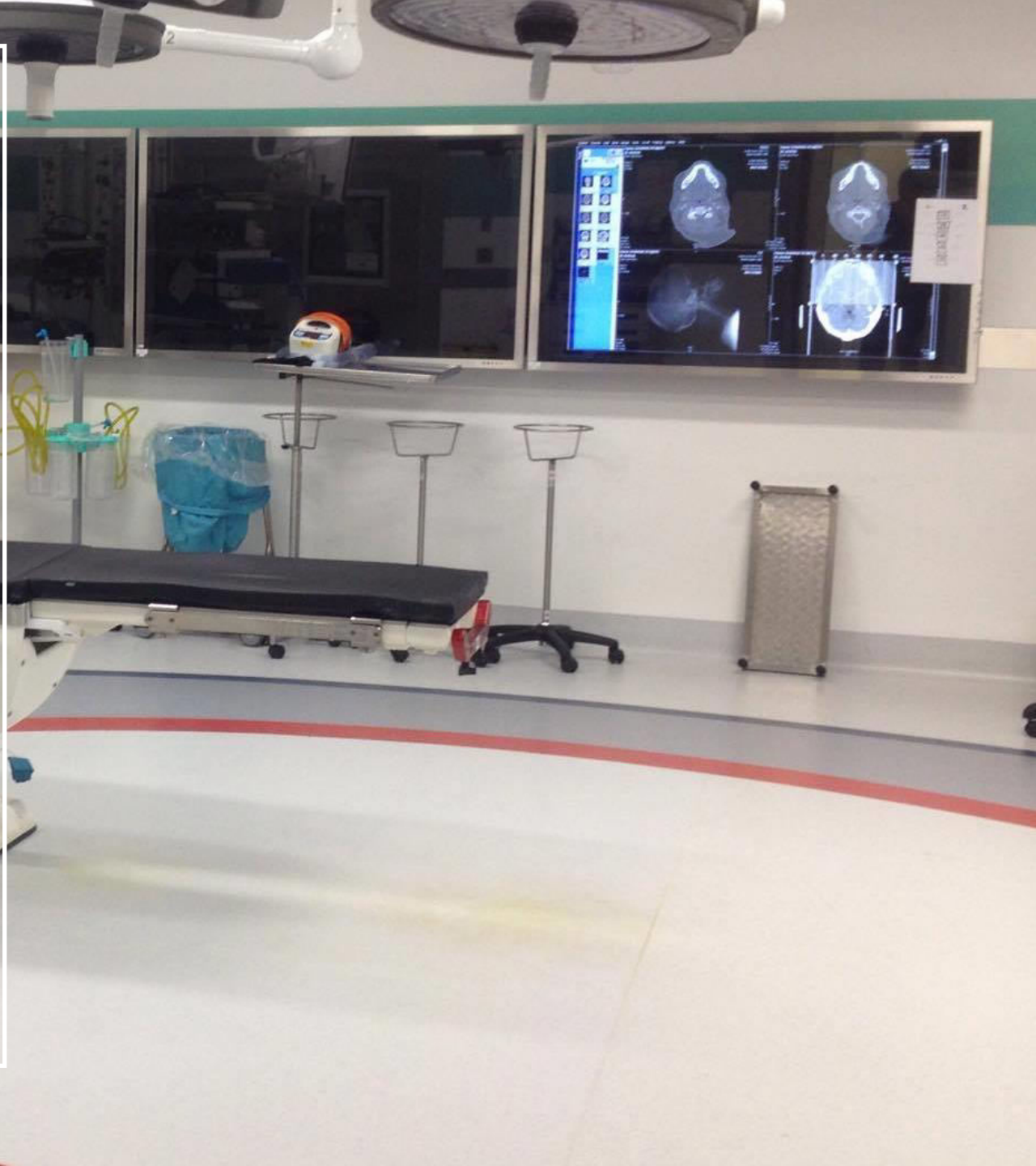
- Doctors are overloaded with work and hence are seen doing over time.
- Long waiting time due to high patient load.
- Report collection time of 24hrs is too long for USG as many other diagnostic centers provide the USG report within 30 min.

RECOMMENDATIONS

- **Signages:** Signages should be incorporated such that they are easily understood & clearly visible
- **Mapping:** The mapping system which already exist needs to be simplified and implemented by the ground staff.
- **Temperature:** at each floor should be modulated accordingly keeping in mind the patient's condition.
- **Staff Training:** More emphasis should be given on staff training for better understanding of Hospital Portal and App system and for improvement of there behavior towards the patients.
- **Manpower:** Enhancement of manpower for patient's navigation and enquiry.
- **IT:** Processes such as registration should be done in online mode as well to reduce patient waiting time.
- **Ancillary Services:** There should be a separate counter from where patient can avail wheelchair services.
- Proper drinking water & sitting facilities should be there in front of the registration counter.
- **Others:** Cases of fall had been observed on the escalators on the ground floor hence proper signages for other options such as elevator and stairs should be incorporated.
- Segregation of hours during the day for appointment patients and walk-in patients for consultation



- Cost estimation should be provided to the patients post consultation.
- Strict rules and regulations on the number of attendants accompanying the patients to reduce overcrowding hence improving the general aura of the hospital.
- Provision of availing sim card facility should be provided to international patients.
- Recruitment of radiologists to reduce workload.
- Decentralization of dispatch counter is required.
- There should be a separate missing report desk for the convenience of patients.
- Staff should be trained well to improve on behavioral work ethics.
- Drinking water should be visible to everyone as it is placed on the backside of the waiting area.
- There should be proper signage for PETCT which is visible to everyone.



CONCLUSION

- In this study our objective was to find out the turn-around-time for the various processes of OPD & Radiology department and the challenges faced by the patients during the processes.
- By the end of the study, we concluded that in OPD maximum waiting time calculated is for Consultation (**0:52:20**) & minimum is at the OPD counter (00:11:42) which are common for all the patients.
- After consultation, once the patient is referred to their respective department, the maximum waiting time observed is for PAC which is (1hr:54mins:40secs). As out of 104 patients only 7 patients visited this department, so this is the Outlier according to the study.
- In Radiology department we concluded that during the process when patient is in the hospital the maximum time taken is in the process of waiting which is 1 hour 51 minutes 58 seconds and 55 minutes for CT scan and USG respectively. We also found out that maximum time is taken in the process of reporting of scans by the doctor which clearly shows the shortage of radiologists or lack of effective utilization of manpower.

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Thank you!

