

ASSESSING RADIOLOGY DEPARTMENT
EFFICIENCY AND ANALYSING
OUTLIERS TO IMPROVE IT'S
PERFORMANCE AT DHARAMSHILA
NARAYANA SUPER-SPECIALTY HOSPITAL,
NEW-DELHI.

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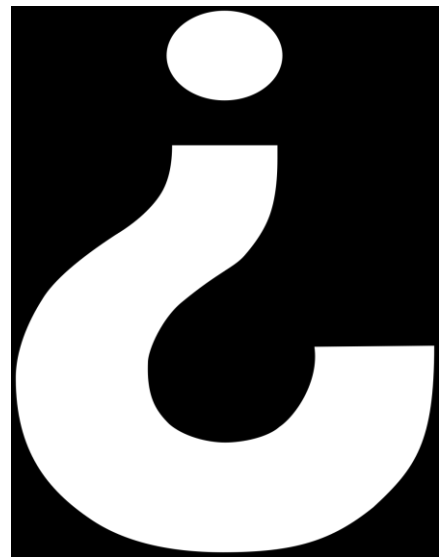
INTRODUCTION

- Diagnostic Process is the driving anchor to disease management. Early diagnosis will always result in better prognosis and lower mortality and morbidity rate. Without diagnosis there is no treatment.
- In all radiological departments, quality, safety, and performance improvement initiatives must be designed and maintained. Adherence to basic quality management concepts, as well as the appropriate use of quality tools, are critical components of such programme.
- With a vast range of tools and procedures available for detection, staging, and therapy, radiology plays a critical role in illness management. Diagnostic imaging can reveal structural or disease-related alterations in detail. It is possible to save a person's life if they receive treatment early on. There can be no treatment and no cure without a proper diagnosis. Treatment efficacy is the goal of quality management
- To maintain the radiology department's maximum efficiency, we must maintain the sweet spot of our services and achieve the highest level of effectiveness by combining goals such as no diagnostic errors or incorrect interpretation, a low incident rate of redo's, and a shorter TAT (Turn Around Time) for early disease detection.

Research question

What is the level of conformity with NABH standards for various quality indicators used to evaluate the efficiency of the Radiology Department and to ensure ongoing quality improvement?

What are the most common causes of radiology department efficiency outliers?



Aim

The study's goal is to evaluate the efficiency of the Radiology department using standardized key performing quality indicators.



Objectives



- ✓ **In the Radiology Department, to examine different important performance quality indicators according to the NABH standard.**
- ✓ **Conduct a trend analysis of quality indicators over the last 12 months to evaluate how they have changed.**
- ✓ **Determine outliers and the primary causes of deviations and discrepancies.**
- ✓ **To determine the relationship between the various variables studied for Radiology Department efficacy.**
- ✓ **To recommend methods to eliminate prospective errors and increase the compliance.**

LITERATURE REVIEW

A study on turn around time of reports in radiology department . The research was carried out for a month at the EHCC's Radiology Department in Jaipur. The study included a sample of 406 reports, including 175 X-Ray reports, 130 USG reports, 70 CT Scan reports, and 31 MRI reports. The reporting of X-rays and CT scans was found to be significantly delayed. Further interventions and modifications, such as human resource management and a digital recording system, can improve the process and reduce the time it takes to report. This will, in the end, improve the entire experience of patients who visit the department and smooth out its operation.

A study on discrepancy rate in Radiology department . From June 2011 to May 2012, all residents and radiologists in the Department of Diagnostic Radiology at the American University of Beirut Medical Centre were studied. The discrepancy rate, or overall difference rate, was 1.62 percent. Inconsistency was higher among first- and second-year residents (1.62 percent and 1.96 percent, respectively) than among third- and fourth-year residents (1.35 percent and 1.24 percent). It was 2.13 percent for computed tomography ($P=0.01$), 1.29 percent for radiography, and 0.8 percent for ultrasound ($P=0.01$). value0.01), as well as musculoskeletal disorders.

- Improving Emergency Department Flow: Reducing Turnaround Time for Emergent CT Scans. During an eight-month period before to the intervention, our emergency department ordered 10,063 CT scans. The average time it took from placing a CT order to receiving the radiologist's final report was 5.9 hours (median=4.2 hours). We formed a multi-disciplinary team of physicians, nurses, technicians, transporters, informaticians, and engineers to identify bottlenecks and implement technology and human factors solutions
- Hoffmann sign: clinical connection between cervical spine and brain neurological imaging findings. In January of 2014, all exposed photos were evaluated at two direct digital laboratories at a Norwegian hospital. The sort of examination, the number of photographs exposed, and the duration of the examination are all factors to consider as well as the amount of deleted photograph. The grounds for removing the photograph were noted and a separate analysis was performed on it. 596 of the 5417 exposed pictures were repeated, resulting in an 11 percent repetition rate. Following the previous faults, the percentage 51.3 percent was repeated. In terms of order, the knee, hip, and ankle tests had the largest percentage of deleted photos, at 20.6 percent, 18.5 percent, and 13.8 percent, respectively.

- Clinical, radiological and histological correlation in diagnosis of orbital tumours. Between September 2000 and August 2010, 83 patients who had an orbital lesion biopsy or orbitotomy were studied clinically, radiologically (CT), and histopathologically to examine if there was a link between clinical radiology and histopathology report . There was a perfect relationship in all of the cases assessed under congenital orbital tumours, lacrimal gland tumours, and sac tumours. The highest unfavourable correlation between clinical diagnosis and final histology was found in lymphocytic illnesses and ocular inflammation. The most commonly misunderstood types of orbital lesions are lymphocytic illness and ocular inflammation.

- Patient satisfaction towards radiological service and associated factors in Hawassa University Teaching and referral hospital, Southern Ethiopia. Using a stratified sample technique, a cross-sectional research of 321 adult patients presented for radiological care in the study area was done. SERVQUAL was used to gauge patient satisfaction (Service Quality). The majority of respondents in this survey were pleased with the radiological services. The satisfaction condition was influenced by the respondent's educational level, occupation, and the length of time it took to enter the examination room. As a result, a determined effort is required to continually enhance patient satisfaction in order to get superior radiological returns as a result of improved patient satisfaction

RESEARCH METHODOLOGY

STUDY DESIGN : Descriptive and observational study

STUDY SITE : Radiology Department of Dharamshila Narayana Super-Speciality Hospital, New Delhi.

STUDY DURATION : January 2020 to March 2021.

DATA COLLECTION SOURCES : Hospital records • NABH guidelines • Capture sheets • Hospital policies and manual

DATA TOOL : QUALITY INDICATORS TO BE ASSESSED FOR THE ANALYSIS

Incident Rate of Reporting Errors per 1000 investigations

Incident Rate of Redo per 1000 investigation

Percentage of Clinical-Corelation of Diagnosis

Turn Around Time for Radiology Reports

DATA ANALYSIS PLAN

After the data has been collected and compiled, a trend analysis was performed for each indicator, using an internal target as a benchmark to ensure consistency in the study.

Outliers were discovered by examining all of the indicators for a few months in which the values were above the benchmark and indicated deviations. Outliers were detected, analysed, and the root cause of those specific events was discovered.

The Descriptive analysis of the data was done by using MS – Excel software for defining and analysing the trend of quality indicators over a period of 6 months based on standardised internal benchmark.

The Inferential analysis of the data was done by using SPSS software for analysing the relationship between the variables using Spearman's rank Correlation Coefficient.

RESULTS

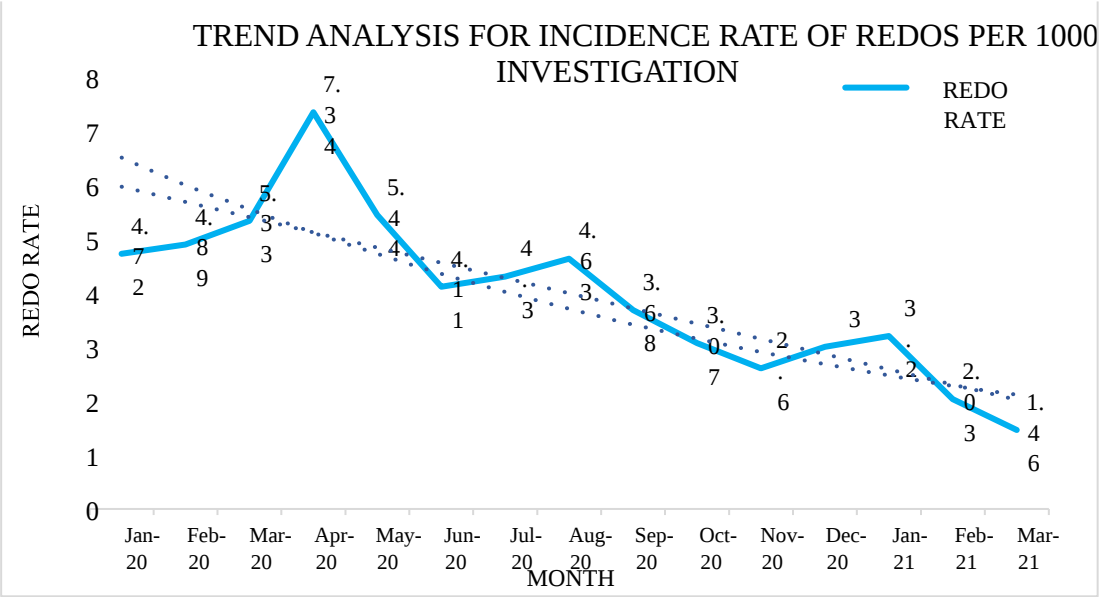


Fig. 1 This line graph depicts the trend for Rate of Redo's in Radiology department over a period of 15 months. We can see that this graph shows a downward slope in the incidence rate of Redo's. the highest rate of incidence was observed in April-20 and lowest was observed in March-21.

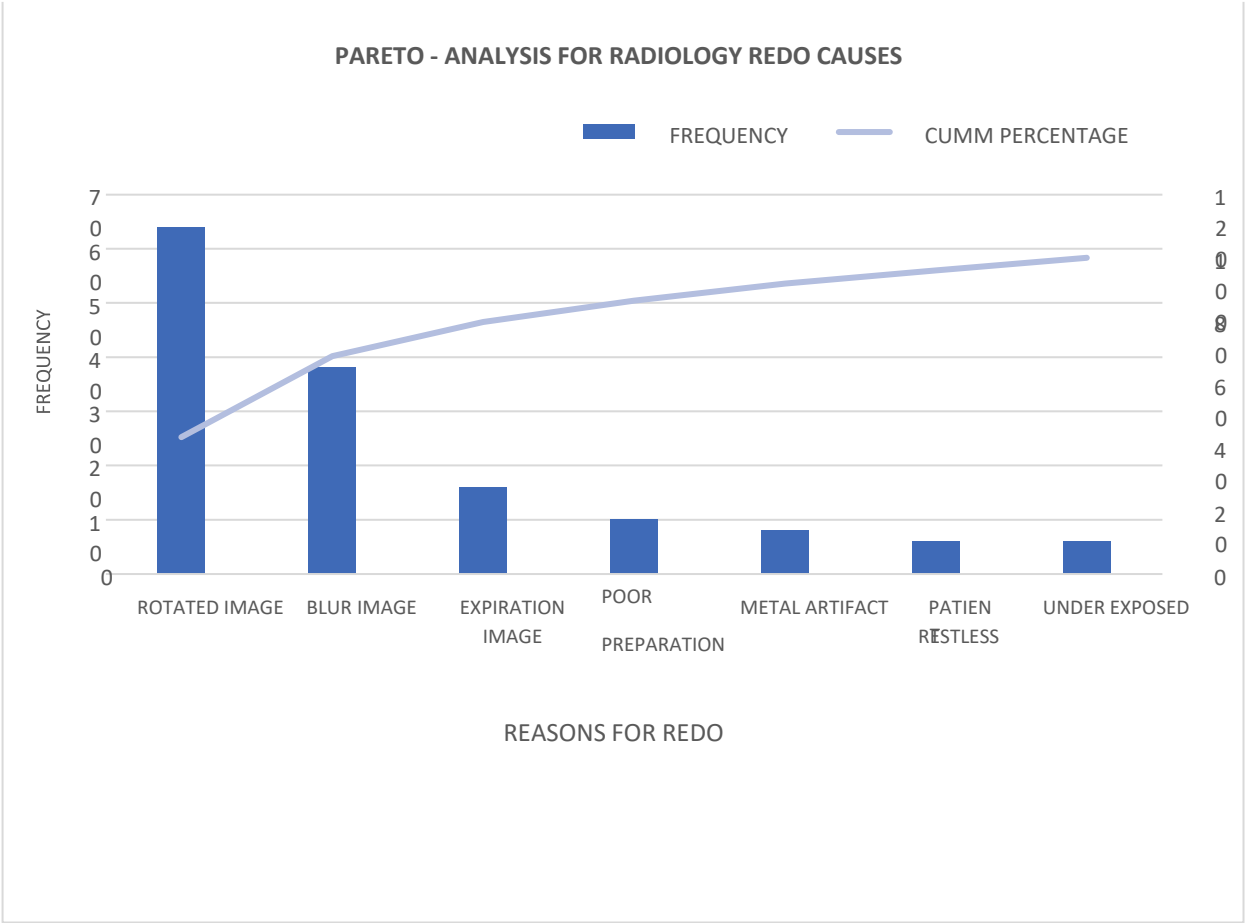


Fig.2 The above pareto depicts the reasons for Redo's in Radiology Department

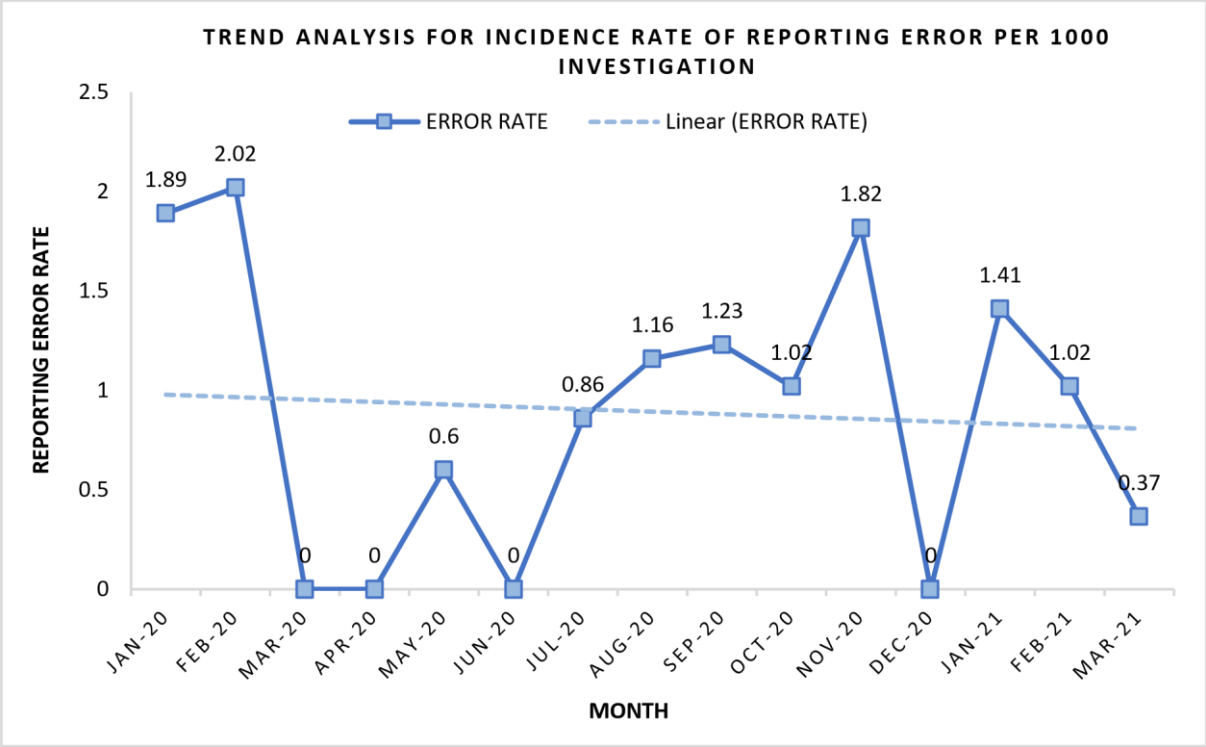


Fig 3. This line graph depicts the trend for incidence rate of reporting error per 1000 investigations in radiology department

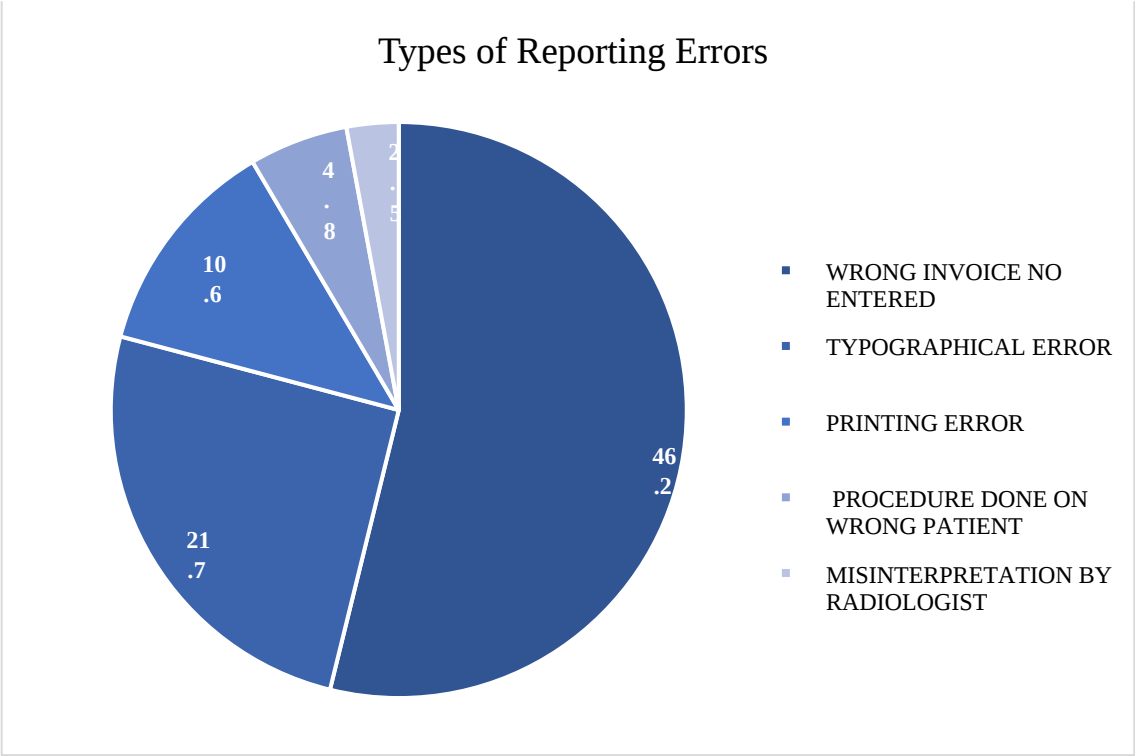


Fig 4: The above-mentioned pie-chart depicts the types of reporting errors done in radiology department.

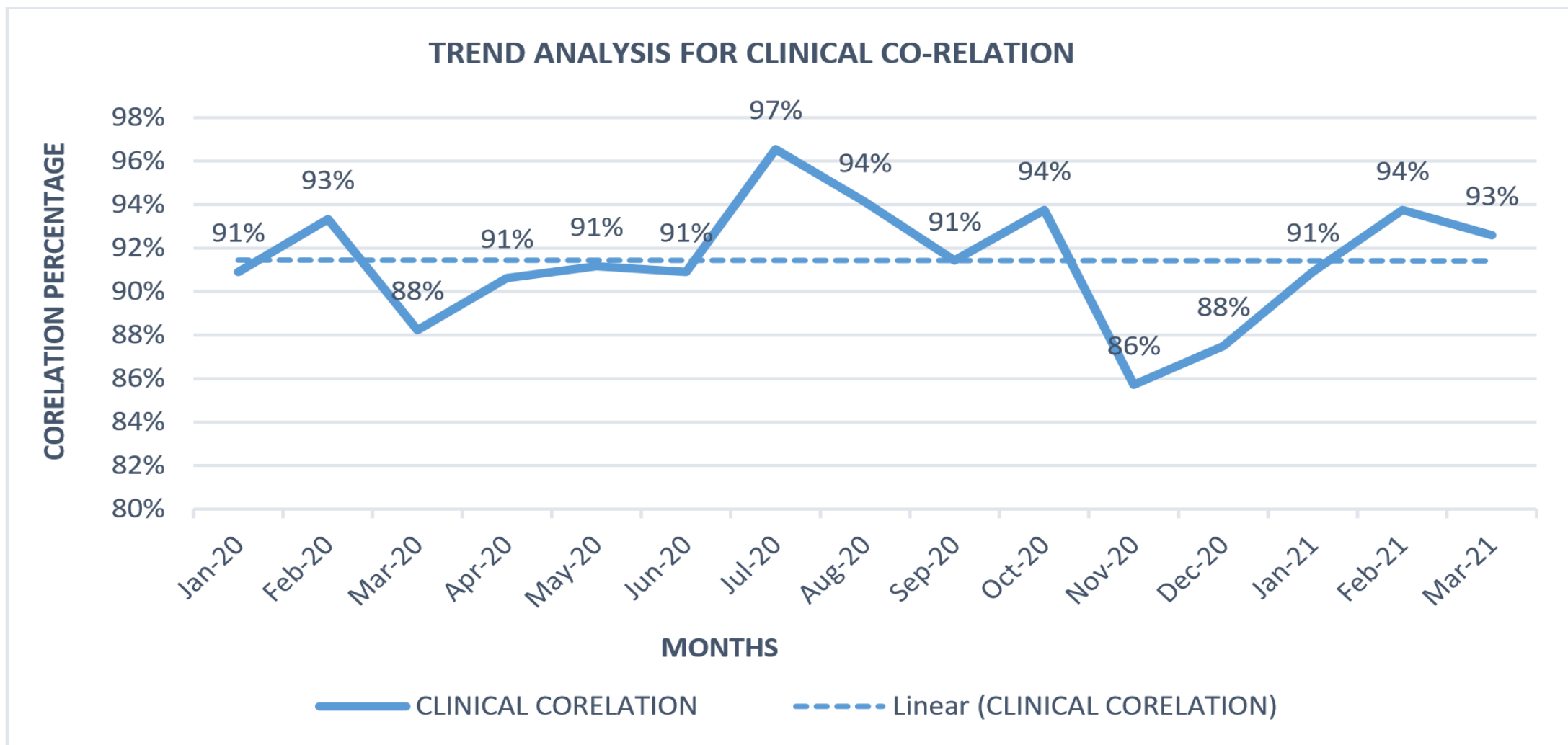


Fig. 5 The above-mentioned line graph depicts the trend analysis for clinical correlation in radiology department.

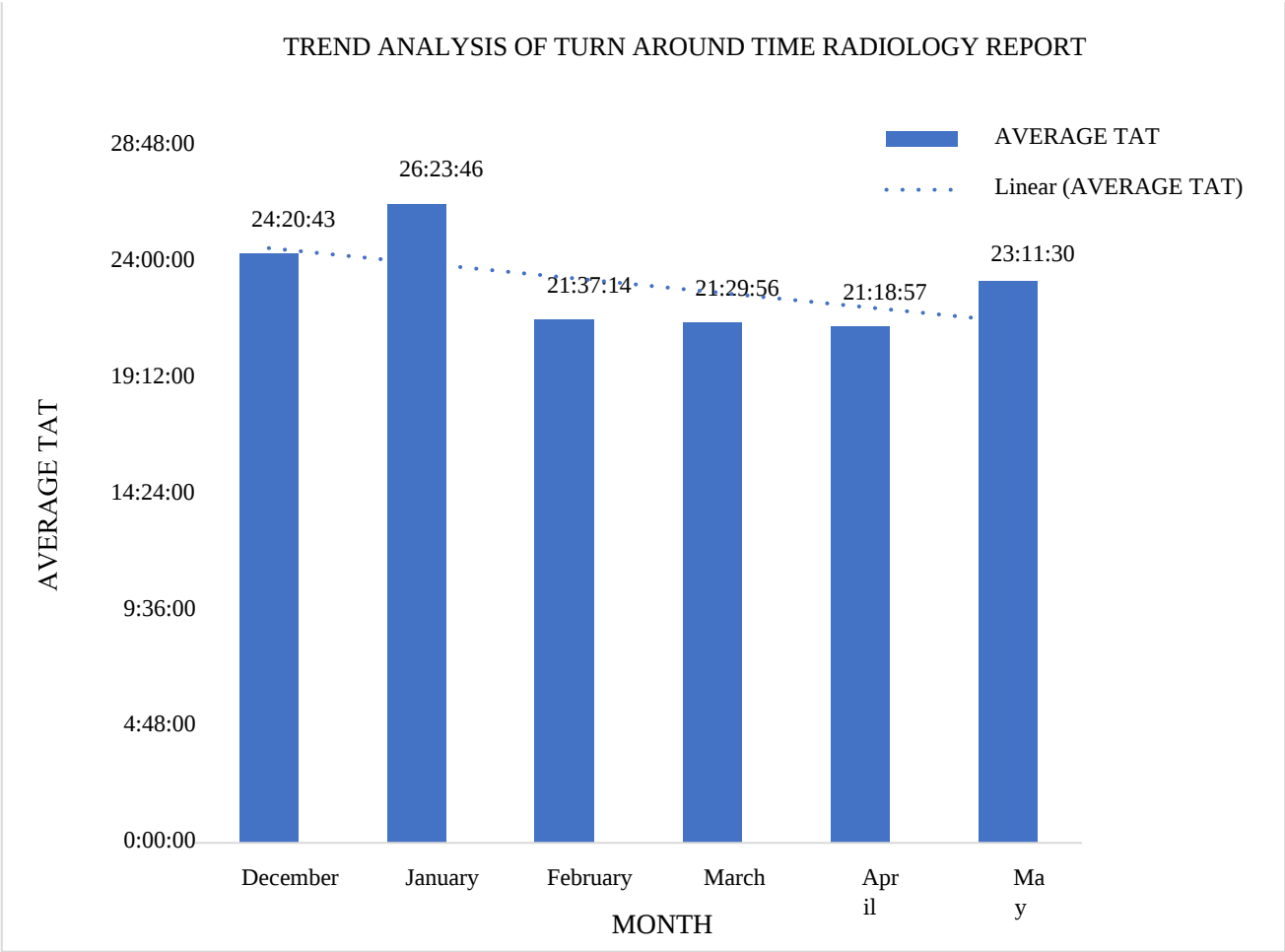


Fig 6 :The above graph depicts the trend analysis for Turn Around Time in Radiology Department .

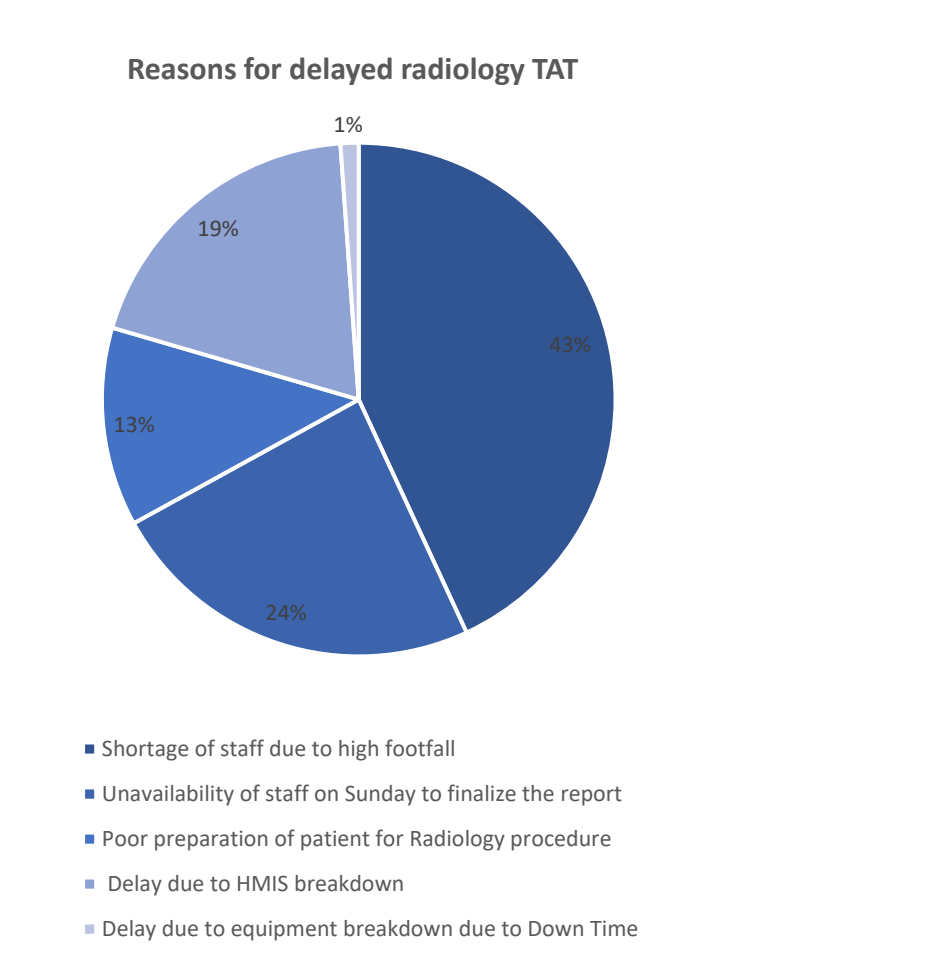


Fig 7: The above-mentioned pie-chart depicts the reasons of reporting delay TAT in radiology department.

INFERENCEIAL ANALYSIS OF THE
DATA TO ASSESS THE
ASSOCIATION

- The above-mentioned table shows the calculation for spearman's correlation coefficient for No. of Reporting errors and Total footfalls of Radiology department.
- The spearman's correlation coefficient for No. of Reporting errors and Total footfalls of Radiology department is 0.707. Thus we can conclude that there is a strong positive association between the two mentioned variables.

Correlations		
		no_of_error ^{**}
Total	Correlation Coefficient	.707
	Sig. (1-tailed)	0.002
	N	15
no_of_error	Correlation Coefficient	1.000
	Sig. (1-tailed)	
	N	15
**. Correlation is significant at the 0.01 level (1-tailed).		

- The above-mentioned table shows the calculation for spearman's correlation coefficient for No. of Redo's and Total footfalls of Radiology department
- The spearman's correlation coefficient for No. of Redo's and Total footfalls of Radiology department is 0.391. Thus, we can conclude that there is positive association between the two mentioned variables

Correlations		
		no_of_redo
Spearman's rho	Correlation Coefficient	0.391
	Sig. (1-tailed)	0.075
	N	15
	Correlation Coefficient	1.000
	Sig. (1-tailed)	
	N	15

DISCUSSION

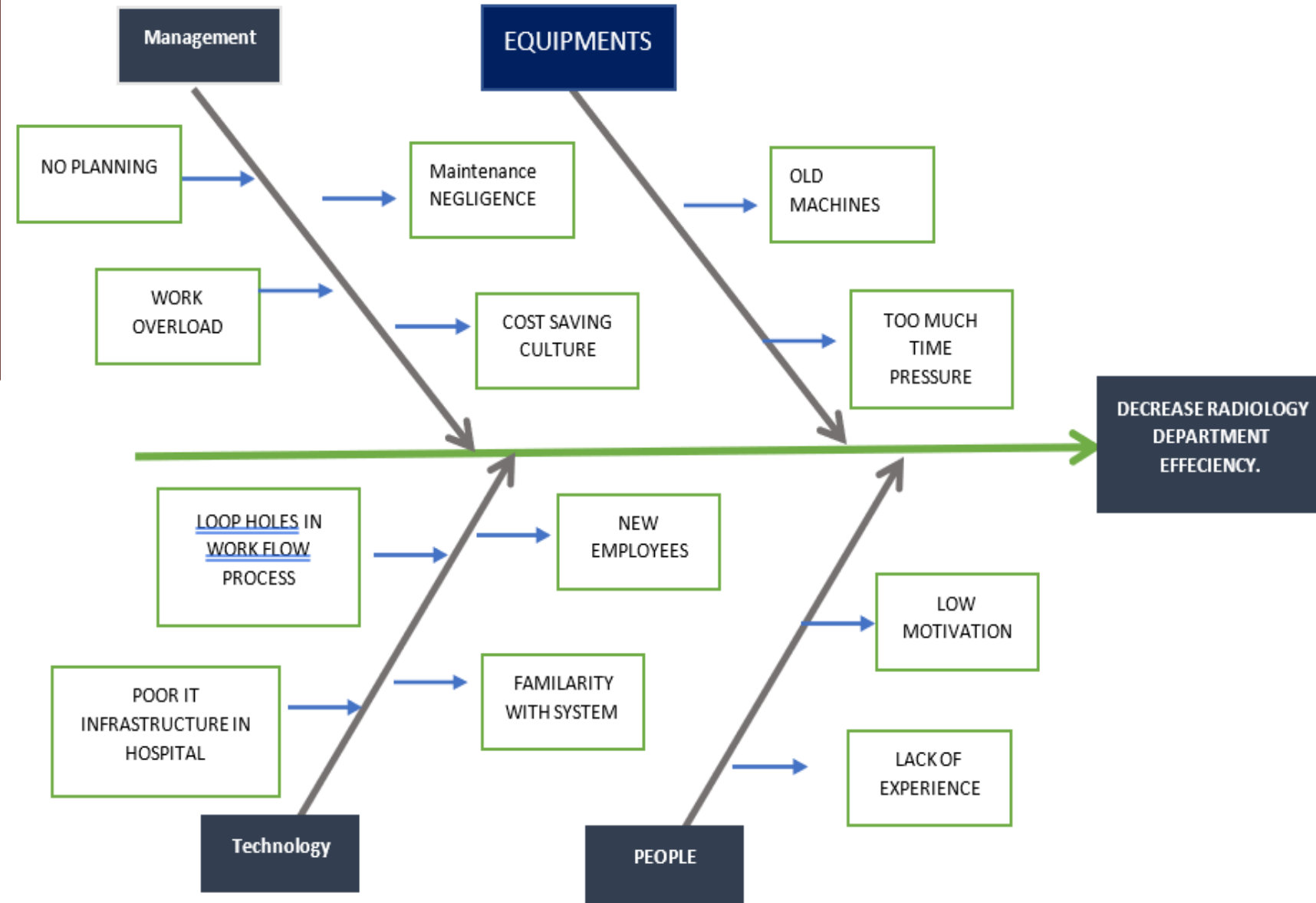


Fig 7. Ishikawa diagram for Radiology Department efficiency.

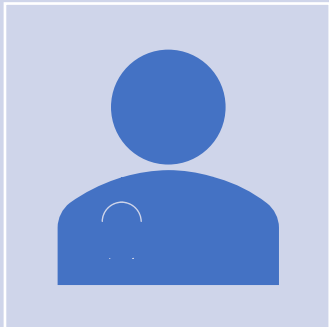
RECOMMENDATIONS

- ❑ A thorough rooster will be designed, with a larger crew available for the hospital's peak hours. Due to the unit's increasing workload, this is primarily geared at catering to the morning hours.
- ❑ Training of technical staff for equipment management.
- ❑ Establishing a monthly feedback system to address any technical difficulties that arise.
- ❑ Dual checking report generation system should be encouraged to reduce the reporting error rate in the department.
- ❑ Positive reinforcement should be given for maintaining the practice of punctuality among the staff and reduce rate of absenteeism to avoid delays and work overload in the department.
- ❑ Implementation of a quarterly audit plan throughout all three phases to ensure that the outcomes achieved are in line with established benchmarks

Conclusion



All of the indicators improving in a steady manner. The average rate of redos in the radiology department is 3.98 per 1000 investigations, the average rate of reporting errors is 1.2 per 1000 investigations, the average percentage of clinical correlation of diagnostic reports in the radiology department is 91%, and the average TAT for IPD patients in the radiology department is 23 hours.



It was found that due to limitation across all the four indicators ; there was an overall decrease in efficiency of the radiology department.

Hence, only upon working on all the four indicators together we would lead to significant improvements in the department



Thank You

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