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ORIGINAL RESEARCH ARTICLE

Teleradiology-Based Clinical Oncology Imaging Reporting in Eight Remote Tertiary Oncology Centres- Six-year Retrospective Study from North Eastern India

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ABSTRACT

Cancer is one of the most significant global health challenges of the 21st century. Besides promoting public awareness, lifestyle modification programs and technology-driven solutions are vital to ensure timely detection, equitable access, and managing the increasing cancer burden. Teleradiology services employing highly qualified radiologists with availability around the clock have been established as a vital tool in diagnosing and precisely staging the cancers in patients located in remote and unserved areas. The study aims to evaluate and determine whether teleradiology can reliably extend specialized oncologic imaging services to centers that lack on-site radiology expertise. A retrospective evaluation of CT, PET CT, MR and PET-MR studies for the workup of cancer at various sites in the body, for which data were collected over a period of 6 years from May 2019 to September 2025 from oncology centers in the remote corners of northeast India. A total of 49,162 imaging studies were analysed and classified based on the regional distribution of cancer. Initiation of prompt reporting, retrospectively calculation of the mean turnaround time for dispatch of reports, maintaining a healthy TAT of < 24 hours, and standardized quality assessment analysis for missed, incomplete findings and typographical errors ensured high quality of reports. Teleradiology services facilitate the development of better and more effective reporting, thereby perhaps contributing to the outcome of patients with cancer.

Keywords: Teleradiology; tertiary centres; oncology; turn around time, teleoncology

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INTRODUCTION

Cancer continues to be one of the most significant global health challenges of the 21st century. The demographic shifts, lifestyle changes, and environmental exposures together have increased both cancer incidence and mortality across the world. As per the World Health Organization, cancer incidence is projected to increase tremendously between 2008 and 2030; by 82% in low-income countries (LICs), 70% in lower-middle-income countries (LMICs), and 58% in upper-middle-income countries (UMICs), as compared to 40% increase in high-income countries (HICs). Overall, about two-thirds of all new cases will occur in LMICs.[1] In 2025, it is projected that India will have approximately 1.57 million cancer patients, with a 12.8% increase in incidence compared to 2020[2,3]. With respect to cancer incidence, India stands second in Asia and third in the world.[4]

Imaging forms the basis of modern oncology, assisting in diagnosis, staging of malignant tumors, and treatment decision-making and response monitoring.[5-12] It distinctly guides in management - surgery, radiotherapy, chemotherapy, or multimodal, for a broad range of malignancies. The conventional imaging techniques, which are crucial for cancer, include computed tomography (CT), magnetic resonance imaging (MRI)[7,8], and [18F] fluorodeoxyglucose–positron emission tomography (FDG-PET) [9-13]. CT provides high spatial and contrast resolution, allowing reproducible 3D visualization of all tissues. It plays a prominent role in initial cancer diagnosis, staging, metastasis detection, and surgical planning. Owing to its versatility and wider accessibility, CT remains the broadly used imaging tool in oncology. MRI is a non-invasive imaging technique used as a problem-solving technique, delivering comprehensive details on soft tissues

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Figure 1: Teleradiology service spectrum provided to eight tertiary oncology centres

such as muscles, ligaments, tumors, and internal organs and, also highly effective at differentiating between normal and abnormal tissue, such as tumors or inflammation. It functions with greater spatial resolution, ensuring no exposure to ionizing radiation for patients.[7,8,14] Dynamic contrast-enhanced magnetic resonance imaging (DCE-MRI) is considered to be a promising biomarker for gauging tumor angiogenesis and the outcome of antiangiogenic therapy [15]. However, due to its intricacy and restricted availability, MRI is not the first preferred modality for the primary diagnosis of tumors6. PET/CT combines a PET - Positron Emission tomography scan (which shows metabolic activity) with a CT scan (which shows anatomy) to provide both functional and structural information. PET-CT is ideal for detecting cancer, staging the disease, and

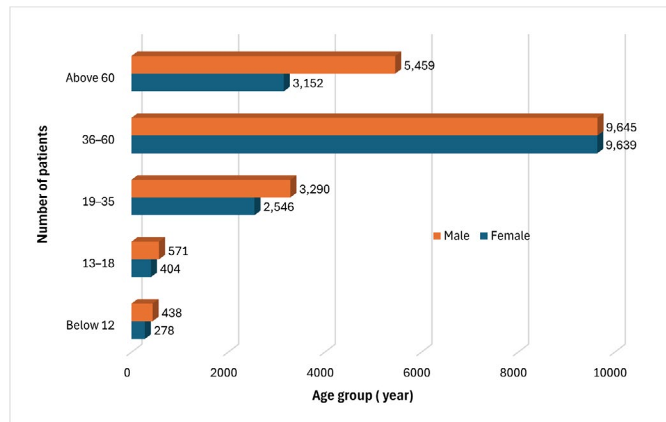

Figure 3: Age-wise distribution of patients

monitoring treatment response. PET-CT aids in identifying the location of a tumor that may not be visible on CT alone, helps determine if a cancer has returned after treatment, and guides radiotherapy planning for more precise targeted treatment.[16-18]

Regardless of the imaging modality, timely, accurate, and high-quality reporting of imaging is a prerequisite for optimal patient outcomes.[9] However, geographic, infrastructural, and human resource constraints often hinder the delivery of such services in peripheral oncology centers. The imaging interpretation needs expert radiologists who are unevenly distributed geographically, primarily centered around tertiary care hospitals, while the smaller hospitals serving semi-urban and rural populations lack adequate on-site subspecialty capacity.[19,20] Teleradiology which is digital transmission and distant interpretation of imaging, provides an efficient route to reallocate subspecialty expertise and lowers the diagnostic times for the population in resource-restricted locations[21-25] based on underlying advanced technologies and infrastructures such as Radiology Information System (RIS) / Picture Archiving and Communication System (PACS) / Digital Imaging and Communications in Medicine (DICOM). Cloud-enabled workflows drive sharing of scans across institutions and time zones, permitting centralized or

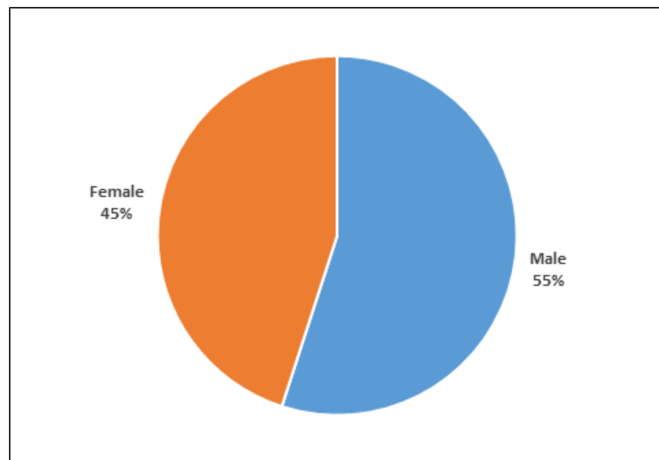

Figure 2: Gender-wise distribution of patients

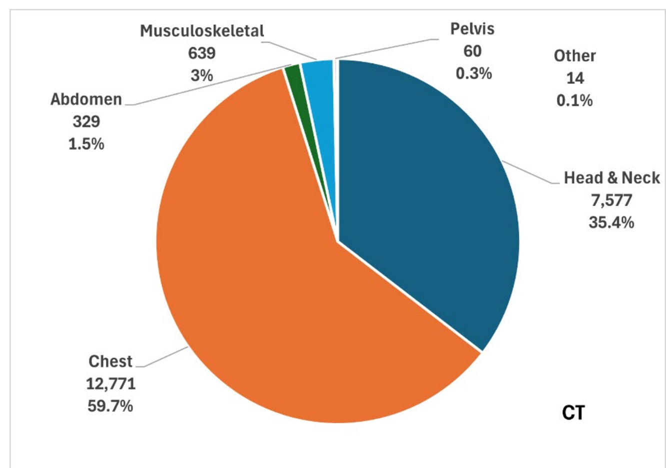

Figure 4: Breakdown of studies contrast CT

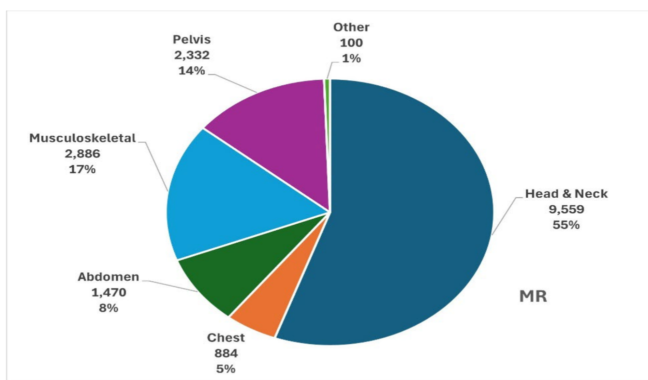

Figure 5: Breakdown of studies contrast MR

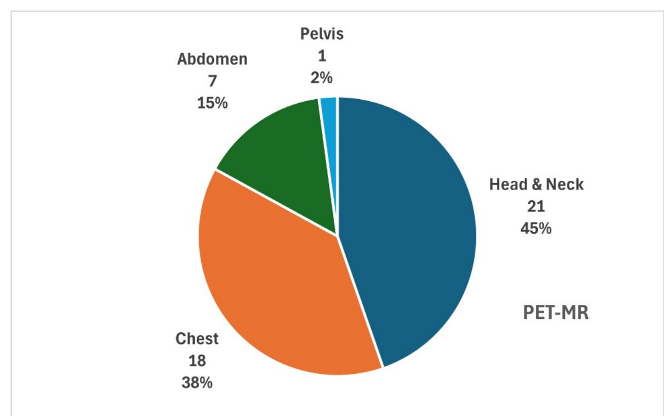

Figure 7: Breakdown of studies PET-MR based on regional distribution of cancer.

networked telereporting models that maintain image quality and allow standardized, structured reporting[26-28]. The promise of these systems is not merely operational; when remote reporting is integrated with multidisciplinary care pathways, it can directly affect and benefit clinical decisions for staging, radiotherapy planning, systemic therapy selection, and post-treatment surveillance [29,30]

Various radiological societies and other reports have documented increasing demand for imaging, radiologist shortage and burnout issues that present diagnostic bottlenecks, and impact timely cancer care [31,32,33]. A delay in cancer treatment is typically associated with increased mortality across multiple tumor types and modalities [34]. Such findings underscore the clinical urgency of reducing turnaround times for imaging reports, one domain where teleradiology demonstrably contributes. The integration of teleradiology into oncology practice offers several distinct advantages. It assures 24*7*365 availability of expert radiologists, decreases diagnostic delays, and supports the use of structured and standardized reporting formats.[12,35] Moreover, the utilization of artificial intelligence (AI) integrated workflow optimizations has enhanced efficiency and accuracy in oncologic teleradiology.[36,37]

However, the adoption of teleradiology also involves challenges. Technical restrictions, variable network bandwidth and image compression issues, data confidentiality requirements, medico-legal and licensing intricacies can impede scale-up. Nonetheless, successful implementations, both in low-resource settings and in high-income health systems, display that these obstacles can be overcome with appropriate infrastructure investments, standardized protocols, and continuous quality assurance [12,38,39]. Teleradiology networks, connecting the remote oncology centers with centralized hubs staffed by experienced radiologists, have demonstrated the potential to ensure timely and accurate oncologic imaging services. This collaborative model aligns with the broader goals of the National Cancer Control Programme and the Digital India initiative, which emphasize the use of technology to improve healthcare accessibility and quality across the nation.[40]

In India, national digital health initiatives and increasing hospital connectivity create an opportune environment for expanding tele-enabled oncologic imaging services to remote oncology centers. When integrated into clinical pathways, teleradiology networks can increase access to expertise, reduce reporting turnaround time, facilitate multidisciplinary tumor boards, and support local capacity building through education and feedback loops.

The objective of our study is to provide insights into the importance of teleradiology in extending specialized oncologic imaging services to remote tertiary oncology centers that may lack on-site radiology expertise, thereby supporting more equitable, timely, and high-quality cancer care.

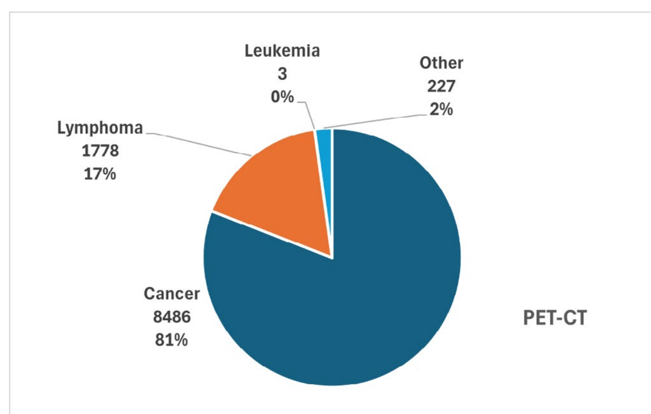

Figure 6: Breakdown of studies PET-CT

MATERIALS AND METHODS

This study involved a retrospective evaluation of CT, PET CT, MR and PET-MR studies for the workup of cancer at various sites in the body. The data was collected over a period of 6 years, from May 2019 to September 2025, from oncology centers in the northeast of India. The DICOM-formatted images of patients were uploaded to RADspa, a cloud-based telereporting platform acquainted with Radiology Information System (RIS) and a Picture Archiving and Communication System (PACS) through secure high-speed (100- 500 Mbps and 4G) internet connectivity. The scans were interpreted

Patient Name:	XXXXXXXXXXXX	Gender/Age:	F/64Y
Patient ID:	XXXXXXXXXXXX	Date of Service:	17/02/26
Referring MD:	XXXXXXXXXXXX	Modality:	CT

Final Report

CT SCAN OF THE NECK, CHEST, ABDOMEN AND PELVIS. February 17, 2026 at 1641 hours

Clinical History: Lung mass under evaluation. Evaluation of thyroid mass with suspected metastatic disease.

Technique: Axial sections with sagittal and coronal reformats from the skull base to the level of the pubic symphysis are obtained in soft tissue algorithm with intravenous contrast.
Contrast-enhanced CT scan of the neck, chest, and abdomen performed with axial sections and multiplanar reconstructions.
Contrast Dose: Not available at the time of interpretation.
Radiation Dose: Total exam DLP 1829 mGy/cm.
Comparison: No prior study is available for comparison.

Findings:
Neck: Thyroid gland: A large heterogeneously enhancing solid lesion measuring approximately 7.6 x 6.5 x 5.1 cm is seen arising from the left lobe of the thyroid gland. the lesion demonstrates irregular margins with multiple areas of central necrosis and coarse calcifications.
Another similar heterogeneously enhancing solid lesion measuring approximately 3.2 x 3.3 x 3.1 cm is noted involving the right lobe of the thyroid gland.The left lobe lesion appears adherent to the external thyroid capsule, suggesting possible capsular involvement.
Cervical lymph nodes: A few enlarged subcentimetric cervical lymph nodes are noted. In the given clinical context, these are suspicious for nodal involvement. The nasopharynx, oropharynx, hypopharynx, supraglottic and infraglottic larynx, vocal cords and upper trachea are unremarkable. The epiglottis and aryepiglottic folds appear unremarkable.
Chest: Lungs: A large heterogeneously enhancing solid lesion with spiculated margins, measuring approximately 3.7 x 3.6 x 3.5 cm, is noted in the left lower lobe. Adjacent ground-glass opacities (GGO) are present. Imaging features are highly suspicious for malignant pathology.
Mediastinum: No significant mediastinal lymphadenopathy is noted.
The aorta is normal. No evidence of mediastinal mass or lymphadenopathy. There is no pericardial effusion.
Abdomen: The liver, spleen, pancreas, adrenals: Appear unremarkable on the present study.
Lymph nodes: Mesenteric adenopathy is noted, comprising multiple enlarged mesenteric lymph nodes, predominantly subcentimetric to borderline enlarged. These findings are suspicious for metastatic nodal involvement in the given clinical setting.
Bowel: No focal bowel wall thickening or obstruction identified.
The gallbladder is unremarkable without evidence of gallstones or inflammatory process.

The kidneys demonstrate normal size and no definite evidence of hydronephrosis, nephrolithiasis, cystic or solid masses.
No evidence of bowel obstruction. The appendix is within normal limits.
The urinary bladder is unremarkable. There is no free fluid, free air or abscess.
The osseous structures are unremarkable.

Impression:
1. Large heterogeneously enhancing thyroid masses, predominantly involving the left lobe with necrosis and calcifications, along with a similar right lobe lesion demonstrating probable capsular involvement, highly suggestive of thyroid malignancy.
2. Suspicious spiculated lung mass in the left lower lobe with adjacent ground-glass opacities, likely malignant.
3. Cervical lymphadenopathy and mesenteric adenopathy, suspicious for nodal metastatic disease.
4. Overall imaging features are suggestive of disseminated malignant disease.

Recommendations:
USG-guided FNAC / core biopsy of thyroid lesion.
FNAC of accessible cervical lymph nodes.
Oncology and endocrine surgery consultation.
Consider whole-body PET-CT for staging and treatment planning.

Radiologic TNM Staging (rTNM):
(Based on AJCC 8th Edition – Thyroid Carcinoma)
Radiologic staging only; histopathology required for final staging

Primary Tumor (T)
Large left thyroid lobe mass measuring 7.6 cm
Aggressive features: heterogeneous enhancement, necrosis, calcifications
Bilateral thyroid involvement
Right lobe lesion adherent to the external thyroid capsule, suggesting gross extrathyroidal extension

rT3b
(Gross extrathyroidal extension limited to strap muscles / capsular breach suspected)
(Upgrade to rT4a only if invasion of trachea, esophagus, larynx, RLN, or major vessels is demonstrated)
Regional Lymph Nodes (N)
Few enlarged cervical lymph nodes present (suspicious morphology)

rN1a – if central compartment nodes
rN1b – if lateral cervical nodes
(Exact subcategory depends on nodal level; radiologically at least N1 disease)
Distant Metastasis (M)
Spiculated left lower lobe lung mass with adjacent GGO
Mesenteric lymphadenopathy
rM1
(Radiologically suspicious for distant metastatic disease)
Final Radiologic TNM Stage
rT3b rN1 rM1
Radiologic Stage Grouping
(If differentiated thyroid carcinoma and age >55 years)
Stage IVC

Imaging suggests advanced thyroid malignancy with bilateral thyroid involvement, nodal disease, and distant metastases (lung and mesenteric nodes) — rT3b rN1 rM1 (Stage IVC).
Considering thyroid as primary. However lung can also be the primary. Tissue diagnosis is needed.For confirmation.

Figure 8: A sample report of a patient

Table 1: Distribution of cancer types in the study cohort

S.No.	*Types of cancer*	*Number of patients*
1	Carcinoma	21,345
2	Lymphoma	1,043
3	Sarcoma	393
4	Myeloma	309
5	Melanoma	23
6	Others	12,309
	Total patients	35,422

by experienced senior radiologists, and the finalized reports were sent back to the hospitals through the same telereporting workflow. Relevant ancillary data, including prior imaging studies, previous reports, and detailed clinical or surgical histories, were concurrently uploaded to the RIS, ensuring a comprehensive clinical context for the reporting radiologists. Studies that were reported through the teleradiology workflow platform during the study period, with entire demographic, clinical, and time data available, were included in the study, while excluding cases with incomplete data.

The demographic information, including age and gender, was obtained via HL7 messages. Further information about modality, procedure, study arrival time, reporting duration, hospital identifier, accession number etc received from DICOM headers. Clinical history and prior scans were obtained from requisitions transmitted with the studies. All data were anonymized prior to analysis per HIPAA Safe Harbor standards.

The distribution of the age, gender, and total number of patients/scans was analysed. Furthermore, the data were classified based on the regional distribution of cancer. The mean turnaround time (TAT) for reporting the studies was calculated. TAT is defined as the time interval between the study being received for reporting from the hospital site to the time at which the report was available online, or the results were verbally communicated to the hospital. The time from when the last image was received till the time when the case was picked up by a radiologist for assessment was maintained within the time specified by the institute. In some cases, with a large number of images, time is required to send all images, so the TAT calculation started from the time we received the last image of the case. An approval from the Institutional Review Board (IRB) (ICL-TRS/IRB/10025/2024**)** was obtained, although no patient identifiers are shared in the study.

An internal peer review mechanism was employed to ensure report accuracy, comprising live peer review (LPR) and post-sign-off peer review (PR). In the LPR workflow, studies were concurrently peer reviewed during the proofing stage prior to final report release. Any suspected missed or discordant findings were escalated in real time to the reporting radiologist through a designated single point of contact (SPOC). Upon radiologist validation, necessary modifications were incorporated into the report before final sign-off. PR was

Table 2: Breakdown of acute oncology emergencies

Finding	*No. of Cases*
Bowel, skin, urinary bladder fistula	258
Airway Obstruction	183
Hemorrhage	168
Acute abdomen	136
Bowel Perforation	3
Post-operative complications (listed below)	3211
Atelectasis/ Lung collapse	1263
Pleural effusion	795
Pericardial effusion	475
Fluid collection	197
Pneumonia	170
Seroma	61
Infection	51
Hematoma	44
Fistula	41
Bowel obstruction	30
Lymphocele	20
Active hemorrhage	11
Incisional hernia	9
Portal vein thrombosis	7
Sepsis	7
Bile leak/Biloma	7
Fever	4
Perforation	3
Infected collection	3
Deep vein thrombosis	3
Enterocutaneous fistula	2
Peritonitis	2
Wound infection	2
Ileus	1
Anastomotic leak	1
Pulmonary embolism	1
Strangulated hernia	1
Total	3959

conducted after the final report release, wherein the studies were peer reviewed within a defined post-sign-off time window. All the discrepancies were peer-reviewed by our Quality Control Committee. Any discrepancies in the findings along with the original radiologist's report are scored based on the American College of Radiology Peer Review Scoring System. Discrepancies were communicated to the reporting radiologist, and validated findings were issued as formal addenda. Besides that, an external quality assurance (QA)/ (external peer review) process was also followed, in which when the hospital or client reviewed the finalized report, flagged a discrepancy, then the report was re-reviewed by the radiologist and an addendum was issued to the original report. The analysis of QA data during the study duration was done.

RESULTS

The study involved analysis of a total of 49,162 imaging studies, from 35,422 patients undergoing evaluation at eight government tertiary oncology centers in the north-eastern regions of India. The studies were reported by 78 teleradiologists located at different locations across India (Figure 1). There were 38 females and 40 male radiologists with ages ranging between 38 and 65 years. All radiologists had more than 10 years of experience in reporting these cases, while 7 of them had also done fellowships in PET-CT. Out of 35,422 patients, 45% (n=16,019) were female and 55% (n=19,403) were male (Figure 2). The age distribution of the study population showed that 2.02% were below 12 years, 2.75% were between 13 and 18 years, 16.48% were between 18 to 35 years, 54.44% were between 35 and 60 years, and 24.31% were above 60 years of age (Figure 3).

Out of 49,162 imaging studies, 21,390 were CT, 17,231 were MR, 10,494 were PET-CT, and 47 were PET-MR studies. The data was further classified based on the regional distribution of cancer. The majority of the CT studies were of the chest at 59.7%, head and neck at 35.4%, musculoskeletal at 3%, abdomen at 1.5%, pelvis at 0.3% and others comprised 1.5% (Figure 4). The distribution of primary cancer by body part for the MR studies was 55% head and neck malignancy, followed by musculoskeletal (17%), pelvis (14%), abdomen (8%), chest (5%) and other (1%) cancers (Figure 5). Among PET-CT studies, 81% were cancers, 17% were lymphoma, 3% were leukemia and 2% were others (Figure 6). Among PET-MR studies, 45% studies were of head and neck, followed by 38% belonging to chest, and 15% studies of abdomen and 2% of pelvic cancers (Figure 7). Out of 35,422 patients, maximum (n=21,345, 60.26%) patients were diagnosed with carcinoma, followed by lymphoma (n=1,043, 2.95%), sarcoma (n=393, 1.11%), myeloma (n=309, 0.87%), melanoma (n=23, 0.06%) and others (n=12,309, 34.75%) were cancers with the unknown site of origin or proven cancer on histopathological reports which were not archived, presenting with clinical symptoms to exclude acute pathologies/chronic unrelated pain etc (Table 1). A sample report is presented in (Figure 8).

The analysis of the acute oncology emergencies has been presented in (Table 2) which included 258 cases of bowel, skin, and urinary bladder fistula, followed by 183 cases showing airway obstruction, 168 with hemorrhage, 3 with bowel perforations, and 3211 cases showing post-operative complications.

Regular and prompt reporting was initiated, and the mean TAT was calculated. For CT, MR, PET CT and PET-MR studies, the mean TAT were 16.66 hours, 95% CI (15.87–17.45),

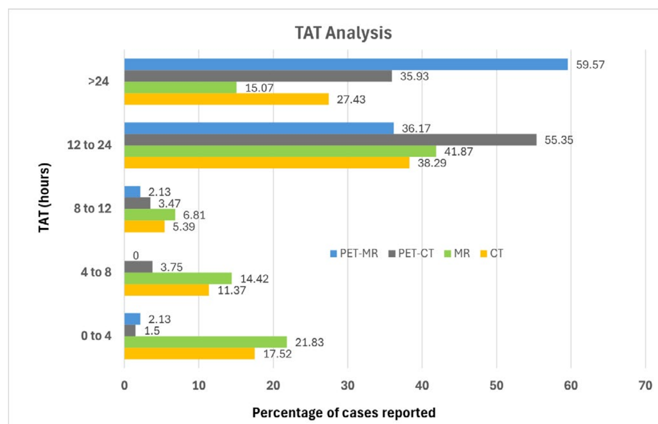

Figure 9: Distribution of TAT (in hours) with modalities

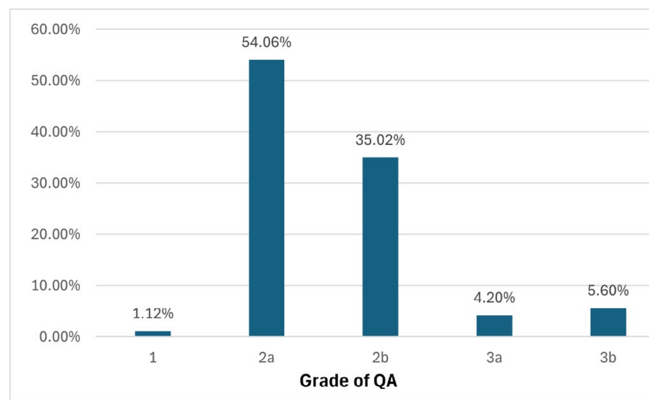

Figure 10: Distribution of QA based on grades

13.98 hours, 95% CI (13.83–14.13), 22.73 hours, 95% CI (22.55–22.91) and 24.66 hours, 95% CI (22.42–26.90), respectively.

The analysis of TAT distribution demonstrated an overall efficient process across CT, MR, PET-CT, and PET-MR studies, reflecting timely case management and consistent reporting practices. A gradual increase in case completion was observed with rising TAT ranges, indicating an organized and structured workflow (Figure 9). For CT studies, approximately 73% of studies were completed within 24 hours, with most cases distributed between 12 and 24 hours (38.29%), suggesting a predictable turnaround for high-complexity studies. Similarly, for MR studies, nearly 85% of studies were completed within 24 hours and 15% within 48 hours, reflecting effective prioritization and timely handling of high study volumes. TAT analysis for PET-CT ranged from < 1 hour to 48 hours; however, the mean TAT was < 24 hours and for 64% of the patients, reports were reported within 24 hours, maintaining healthy reporting timings. 1.5 % studies were reported within 4 hours, and maximum studies (55.35%) were completed between 12 and 24 hours, 35.93% were completed between 24 and 48 hours, indicating steady and efficient reporting timelines.

A standardized and robust peer review process for missed findings and typographical errors was consistently maintained to ensure quality. Out of 49,162 imaging studies, over a six-year period, there were only 357 (0.72%) QA audited cases with discrepancies. Thus, the overall accuracy rate was 99.28%. Among 357 QA cases, only 35 (9.8%) cases were high-grade discrepancy cases (including 3a and 3b). The distribution of QA grades among the audited cases was as follows: Grade 1 (1.12%), Grade 2a (54.06%), Grade 2b (35.02%), Grade 3a (4.20%), and Grade 3b (5.60%) (Figure 10). Out of 357 QA cases, 167 were internal QA cases while 188 were external QAs. The overall error rate for external QA cases was 0.38%.

DISCUSSION

Prompt availability of reports in the setting of acute emergent conditions in oncology greatly benefits patients in reducing morbidity and mortality due to early recognition of associated unforeseen complications [41]. Teleradiology has demonstrated extraordinary utility in emergency settings. The inception of teleradiology as a robust support for insufficient local resources has proven to be of vital importance, with adherence to reporting protocols and availability for clinical discussion, guiding the clinician for further investigation and optimum utilization of all the imaging modalities available in the oncology centers to benefit the patient by increasing patient compliance. Teleradiology directly addresses radiologists' shortages and streamlines diagnostic workflows and influences treatment decisions [24,42]. Our study indicates that teleradiology may significantly influence cancer treatment decisions in a resource-limited environment like the tertiary oncology centers in remote areas under study.

Gender distribution is slightly uneven, with 55% males as compared to females at 45%. The maximum number of patients (54.5%) was between 35 and 60 years of age. This observation coincides with the highest utilization of radiology scans under the same age group in other studies [43]. The wide age range, including young adults and elderly patients, demonstrates the broad applicability of advanced imaging in oncology care.

Imaging such as CT, PET/CT, and MRI each play a vital role in oncology, with CT providing detailed anatomy, MRI excelling at soft tissue contrast, and PET/CT combining functional and anatomical information to detect cancer activity, stage the disease, and monitor treatment response [44]. The choice of imaging depends on the specific clinical scenario, such as whether the tumor is in the brain, abdomen, or bone, and what information is needed. In our study, 49,162 imaging studies were telereported for oncology, viz-a-viz CT (21,390), MR (17,231), PET-CT (10,494), and PET-MR (47) studies, implicating the importance of imaging in oncology care.

CT provides high-resolution anatomical images, best for diagnosing and staging cancers in the abdomen, excellent for visualizing osseous structures and determining the overall size, morphology and extent of a tumor. Calcification is best detected on CT studies. MRI is best for the diagnosis of cancer in the head and neck, brain and liver. Overall, the imaging patterns observed reinforce the complementary roles of CT, PET-CT, and MRI in comprehensive cancer evaluation. PET-CT remains indispensable for systemic oncologic assessment, CT continues to lead in baseline and follow-up evaluation,

and MRI provides precise local staging and characterization when soft-tissue detail is critical. These findings support an integrated, multimodality imaging strategy to optimize diagnostic accuracy and patient outcomes.

Teleradiology services employing highly qualified radiologists with availability around the clock have been established as a vital tool in diagnosing and precisely staging cancers by following set protocols and maintaining standards. It has contributed to identifying acute oncology emergencies, thereby enabling prompt diagnosis of critical and life-threatening conditions in cancer patients that need immediate intervention. Some examples of emergencies in the oncology setting are bowel perforation in malignancy cases, brain neoplasms with hemorrhage, post-operative complications, oncology-related fistulae (bowel, urinary bladder, skin), airway obstruction in head and neck malignancies, etc. Post-operative complications in cancer patients commonly include infections (wound, pneumonia), anastomotic leaks, bowel obstruction, and cardiovascular issues, which are often exacerbated by patient frailty, advanced age, and prior treatments like chemo-radiation, leading to prolonged hospital stays, delayed adjuvant therapy, and higher mortality. Teleradiology services had a solid impact in facilitating timely treatment and improving patient outcomes in life-threatening scenarios. Paucity of skilled radiologists in remote centers has increased the need and the role of teleradiology in maintaining the superior quality of reports for accurately guiding patient management. In the tertiary oncology centres included in our study, there was a limited number of in-house radiologists relative to the substantial imaging workload; thus, teleradiology services were provided to support and ensure timely reporting. Repeatedly, it has been reiterated and proved that telereporting has had a significant influence in modifying and solving the challenges faced by centers deprived of adequate staff and cut off by geographical hindrances [45].

TAT across all modalities was within acceptable clinical limits, reflecting timely reporting and coordinated workflow. PET CT showed relatively longer durations, consistent with its greater procedural complexity and interpretive requirements. Regular and prompt reporting was initiated, and the mean TAT was calculated. In the study, the mean TAT for CT, MR, PET CT and PET-MR studies were 16.66 hours 95% CI (15.87-17.45), 13.98 hours 95% CI (13.83-14.13), 22.73 hours 95% CI (22.55-22.91) and 24.66 hours 95% CI (22.42-26.90), respectively. The interpretation times averaging less than 24 hours significantly outperform previously reported benchmarks for oncology, which usually range from 24 to 48 hours. The potential to deliver such rapid interpretation times to the hospitals/ tertiary healthcare centres in remote locations demonstrates the scalability and impact of modern teleradiology infrastructure and process.

As a teleradiology service provider, we are committed to delivering safe, high-quality care in compliance with Joint Commission (JC) standards and the American College of Radiology (ACR) peer review process for QA reports led by expert radiologists [45,46]. The structured, dual-tier in-house internal peer review process enabled early error detection, reduced downstream report revisions, and supported high diagnostic quality. A very low rate (0.38%) of external QA (from the site hospitals) validated the high-quality reporting from our institution. Moreover, the QA cases-based training, academic conferences and continuing medical education (CME) are organized regularly to foster continuous learning and professional growth across the team [47].

CONCLUSION

India has achieved remarkable progress in holistic cancer care by enhancing screening, treatment and prevention via policy amendments, growing healthcare frameworks, and governmental financial support programs. National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) initiative under the National Health Mission (NHM) is directed towards empowering cancer control initiatives, emphasizing health improvement promotions, early screening, and treatment infrastructure and facilities for cancer. The Union Budget of the year 2025–26 further strengthens cancer services by establishing Day Care and Tertiary Care Cancer Centres (TCCCs) and providing customs duty exemptions on essential life-saving drugs. Through a coordinated multi-sectoral effort and sustained government commitment, India is working toward a robust, inclusive cancer care ecosystem that enhances outcomes for patients across the country. However, impediments persist in ensuring equitable access, timely detection, and managing the increasing cancer burden. Besides promoting public awareness, lifestyle modification programs and technology-driven solutions are vital. Teleradiology services are capable of revolutionizing oncology care. By redistributing reporting workload, teleradiology has the potential to significantly improve cancer care and management for remote oncology settings. A standardized and robust peer review process for missed findings and typographical errors should be consistently maintained to ensure quality reporting. Further integration of artificial intelligence (AI) with teleradiology would further enhance diagnostic accuracy, enabling early detection of cancer, reducing diagnostic errors and improving efficiency.

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