IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A Survey On Awareness And Perception Of Artificial Intelligence In CT And MRI Imaging Among Radiology Professionals

Anamika Singh, Zahid Ahmad Rather, Vishali, Chetna Bhardwaj, Sanjay Poonia,

Abstract

Background: Artificial Intelligence (AI) is rapidly transforming diagnostic radiology, particularly in computed tomography (CT) and magnetic resonance imaging (MRI). While its global integration into clinical workflows continues to expand, awareness, accessibility, and practical adoption among healthcare professionals in India remain underexplored.

Objective: To assess the current level of awareness, accessibility, and perception regarding AI applications in CT and MRI imaging among radiologists, radiographers, postgraduate students, and imaging technologists.

Materials and Methods: A structured questionnaire comprising 12 closed-ended questions was distributed via Google Forms in november 2025. The survey targeted professionals working in radiology departments across various institutions in India. Responses were collected anonymously and analyzed to assess awareness levels, access to AI-integrated systems, and perceptions of AI's role in imaging practice.

Results: The survey revealed high awareness of AI applications in medical imaging, with most participants recognizing its potential to enhance diagnostic accuracy and reduce human error. However, limited hands-on experience and a lack of formal training were reported as major barriers to adoption. Departmental access to AI tools and infrastructure varied significantly across institutions.

Conclusion: While awareness of AI's role in CT and MRI imaging is increasing, practical implementation remains limited due to inadequate training and infrastructure. Bridging these gaps will require formal integration of AI modules into radiology curricula, institutional support for AI adoption, and targeted training programs to build competency in AI-assisted imaging.

Keywords: Artificial Intelligence; Radiology; CT Imaging; MRI; Medical Imaging; AI Awareness; Radiology Education; AI in Healthcare

Introduction

Artificial Intelligence (AI) is rapidly transforming the field of medical imaging by enhancing diagnostic accuracy, reducing human error, and accelerating image interpretation. In data-intensive modalities such as computed tomography (CT) and magnetic resonance imaging (MRI), AI plays a pivotal role in segmentation, classification, and automated analysis, thereby streamlining radiology workflows and enabling earlier disease detection [1,7].

The integration of AI-powered systems is driving a technological shift in radiology. These tools assist radiologists by automating routine tasks, improving report turnaround times, and reducing inter-observer variability. AI algorithms are increasingly capable of identifying subtle abnormalities that may be overlooked by human observers, thereby contributing to more precise and timely diagnoses [2,9].

Despite these advancements, concerns persist about the possibility of AI replacing radiologists. However, prevailing expert consensus supports the view that AI is best suited as an assistive tool rather than a replacement, as it lacks the ability to incorporate clinical context and human judgment—both of which are essential for patient-centered care [3,8].

In developing countries like India, AI integration into routine radiological practice remains limited due to infrastructural constraints, lack of formal training, and insufficient awareness. Even in academic institutions where theoretical knowledge of AI exists, practical exposure to AI tools is often absent, revealing a significant gap between education and clinical application [4,5,10]. Ethical concerns, questions around job security, and the interpretability of AI-generated results further shape acceptance among radiology professionals [8,10].

Given these challenges and the emerging role of AI in imaging, it is essential to assess how radiology professionals—especially students and faculty—perceive the use of AI in CT and MRI. This study evaluates their awareness, understanding, hands-on exposure, and attitudes toward AI, while also gauging their willingness to participate in AI-based training initiatives [6].

Aim

To assess the awareness, understanding, and practical exposure to artificial intelligence (AI) applications in CT and MRI imaging among radiology professionals, faculty members, and students through a structured questionnaire-based survey.

Objectives

1. To evaluate the current level of awareness and understanding of AI in medical imaging among radiology students, faculty, and practicing professionals.
2. To determine whether CT or MRI is perceived to have greater integration of AI technologies.
3. To identify the primary sources of AI-related knowledge and exposure in radiology education and clinical practice.
4. To assess the extent of hands-on experience with AI tools or software among the survey participants.

Materials and Methods

This cross-sectional, questionnaire-based survey aimed to assess awareness, exposure, and perceptions regarding Artificial Intelligence (AI) applications in CT and MRI imaging among radiology professionals and students.

A structured questionnaire consisting of 12 closed-ended questions was developed using Google Forms. The questionnaire was organized into the following sections:

- Demographics and academic qualifications
- Access to AI tools within radiology departments
- Awareness and understanding of AI applications
- Trust and opinions regarding AI-assisted reporting
- Prior exposure to AI training and interest in future training programs

The survey was disseminated online through academic WhatsApp groups and institutional email platforms. The target population included:

- Undergraduate students (B.Sc. Radiography/MRIT)
- Postgraduate students (M.Sc. Radiography/MRIT)
- Faculty members and clinical instructors from radiology departments

Participants were informed that data collected would be used exclusively for academic and research purposes. Participation was voluntary, and no personal identifiers or patient-related information were recorded. Following institutional guidelines, formal ethical clearance was not required for this anonymous survey.

The survey was open from 10 november 2025 to 20 november 2025, during which 136 valid responses were received. Data were compiled using Microsoft Excel and analyzed through descriptive statistics, including frequency and percentage distributions. Bar graphs and pie charts were employed to visually represent trends in AI awareness, access to AI software, usage patterns, interest in training programs, and variations in perception across different academic qualifications and professional roles.

Results

A total of 136 responses were received, with the majority of participants being undergraduate (B.Sc.) students, followed by postgraduate (M.Sc.) students and faculty members. These responses provided valuable insights into the current level of awareness, exposure, and perceptions of AI applications in radiology.

1.Role of Respondents

Table 1. Distribution of Respondents by Role[N=136]

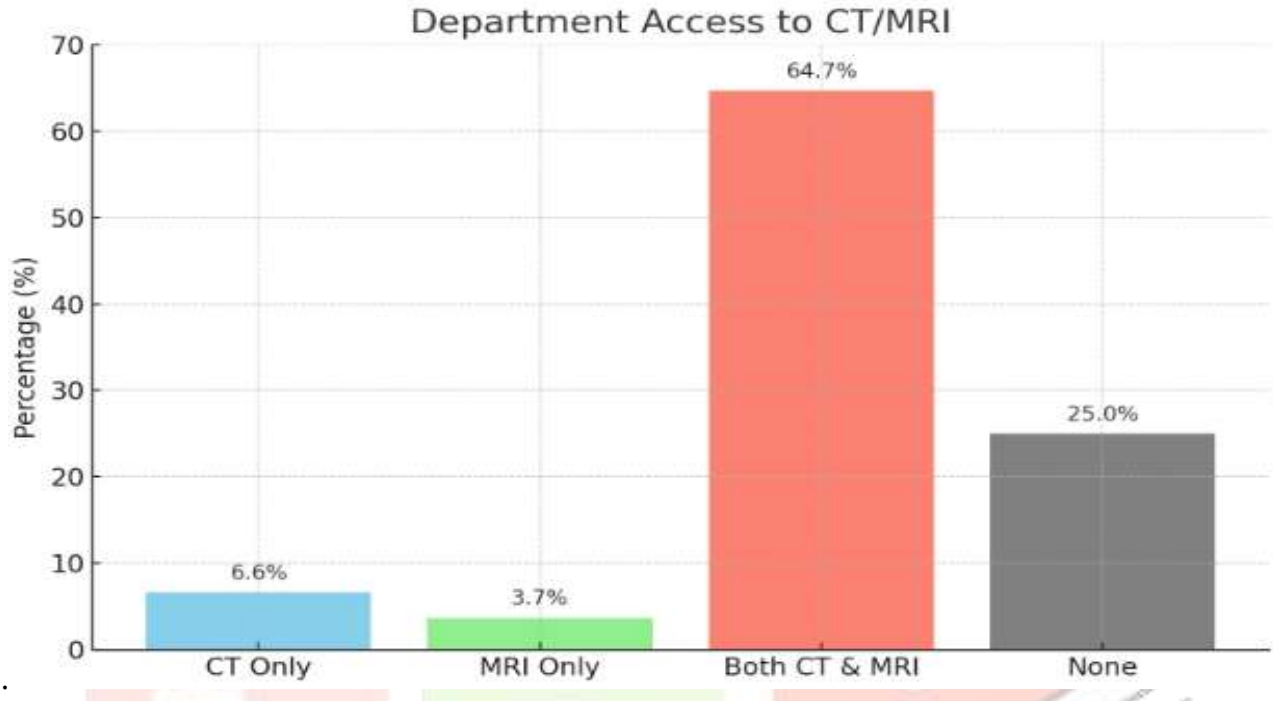
Role	Number	Percentage (%)
Bachelor/Intern students	85	62.5
Radiotechnologists	23	16.9
Postgraduate students	18	13.2
Faculty/Professor	10	7.4

The majority were undergraduate radiology students “62.5%”, followed by radiotechnologists “16.9%”, postgraduate students “13.2%”, and faculty/professors “7.4%”.

2.Department Access to CT or MRI

As shown in **Figure 1**, 64.7% of respondents had access to both CT and MRI, while 25% had no access. Only 6.6% reported access to CT alone, and 3.7% to MRI alone.

Figure 1. Distribution of Department Access to CT/MRI among Respondents (N=136).



.

3. Awareness of AI in Medical Imaging

Table 2. Awareness of AI in Medical Imaging[N=136]

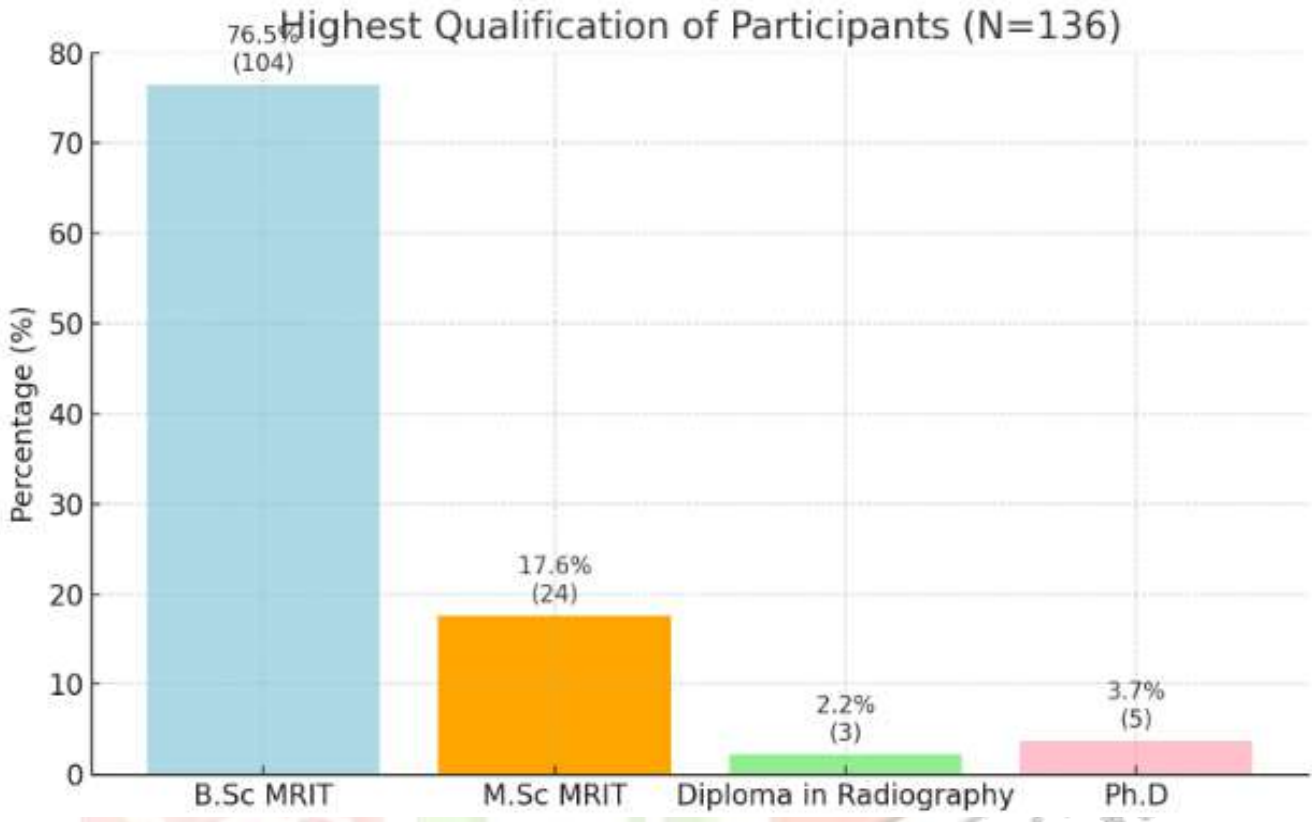
Response	*Number*	*Percentage (%)*
Yes	*102*	*75.0*
No	*11*	*8.1*
Not sure	*23*	*16.9*

As summarized in Table 2, 75% reported being aware of AI in medical imaging, 8.1% were not aware, and 16.9% were unsure.

4. Respondents' Educational Qualification

As shown in Figure 2, the majority of participants were B.Sc. MRIT (76.5%), followed by M.Sc. MRIT (17.6%). Diploma holders (2.2%) and Ph.D. participants (3.7%) represented smaller proportions.

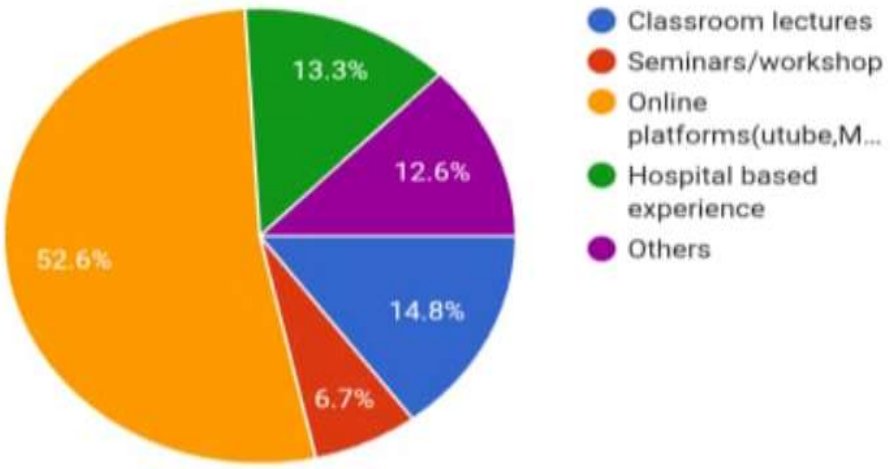
Figure 2. Distribution of Respondents by Highest Educational Qualification (N=136).



5.Source of AI Knowledge.

As shown in Figure 3, the majority of respondents (52.6%) reported acquiring AI knowledge through online platforms such as YouTube, MOOCs, and webinars, whereas traditional classroom lectures (14.8%) and hospital-based learning (13.3%) were less frequently reported.

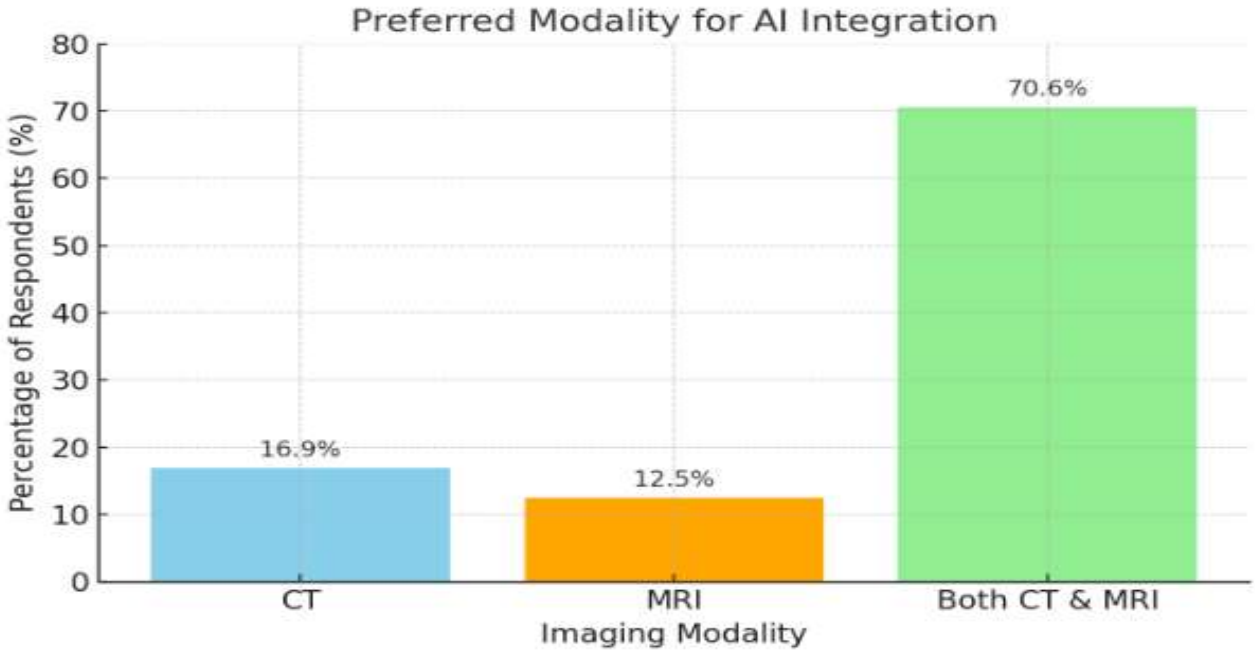
Figure3: Source of AI Knowledge among Radiology Respondents.



6. Preferred Modality for AI Integration

As shown in Figure 4, a majority of respondents (70.6%) preferred AI integration in both CT and MRI modalities.

Figure4: Respondents' Preferred Modality for AI Integration



7.Practical Exposure to AI Software

As shown in figure5, only 32.8% reported having hands-on experience with AI software during their clinical practice or academic training. In contrast, 67.2% indicated no prior experience using such tools. This disparity emphasizes a notable gap between AI awareness and practical exposure, suggesting that while interest in AI is rising, actual implementation in radiology training programs remains limited.

Figure 5: Percentage of respondents with practical experience using AI tools or software during clinical training or clinical practice (n = 134).

8. Perceived Benefits of AI

Survey participants identified several advantages of AI in radiology, with 40.4% highlighting faster diagnosis as the primary benefit. This was followed by 33.8% citing reduced workload on radiologists, 16.2% noting improved image quality, and 9.6% mentioning automated reporting as a significant gain.

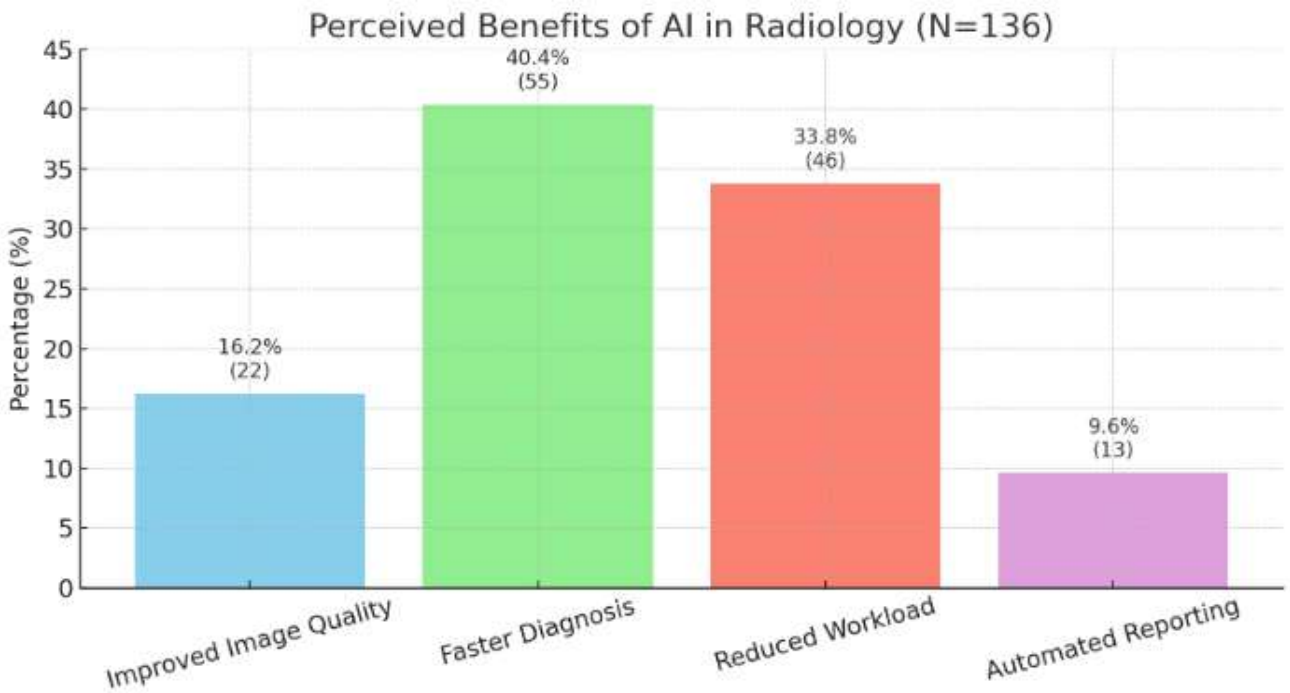


Figure 6: Perceived benefits of AI in radiology, as identified by participants (n = 136).

Table 3. Perceived Benefits of AI in Radiology (N = 136)

Benefit	Percentage (%)	Number of Respondents
Faster Diagnosis	**40.4%**	**55**
Reduced Workload	**33.8%**	**46**
Improved Image Quality	**16.2%**	**22**
Automated Reporting	**9.6%**	**13**

9. Trust in AI Without Human Review

When questioned about their trust in AI-generated reports without human oversight, 38.2% of respondents stated "No," while 34.6% responded "Not sure." Only 27.2% expressed trust in AI-generated reports without human review. These results highlight a prevailing uncertainty and cautious attitude among participants regarding full automation in radiology reporting.

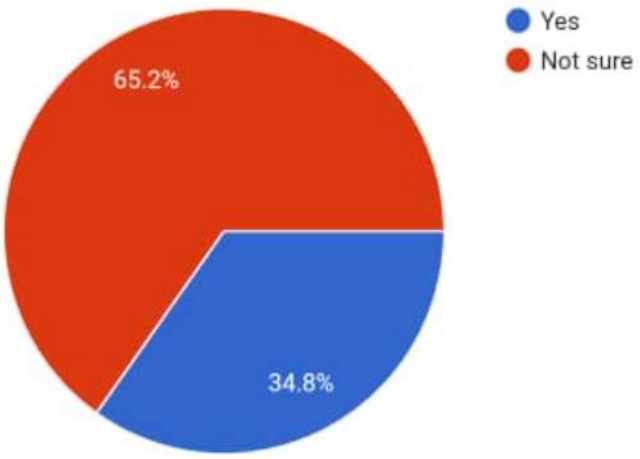
Table 4. Distribution of respondents' trust in AI-generated reports without human review (n = 134).

Response	Percentage (%)	Count
Yes	27.2%	36
No	38.2%	51
Not Sure	34.6%	47

10. Belief About AI Replacing Radiologists

Out of the 136 participants, 34.8% believed that AI might eventually replace radiologists, while 65.2% responded with "Not sure." These findings indicate ongoing uncertainty but also suggest that a majority remain cautious or unconvinced about AI fully replacing human expertise in radiology.

Figure 7: Respondents' Opinion on Whether AI Will Replace Radiologists in the Future(N=136).



11. AI Training Exposure

Among respondents, only 11.8% reported having received formal AI training, while 36.8% were planning to pursue it. A significant 51.5% had not yet received any AI-related instruction. These numbers emphasize a current training gap despite increasing awareness and interest in AI technologies in radiology.

Figure 8**:** Exposure to AI training in radiology among participants (N = 136).

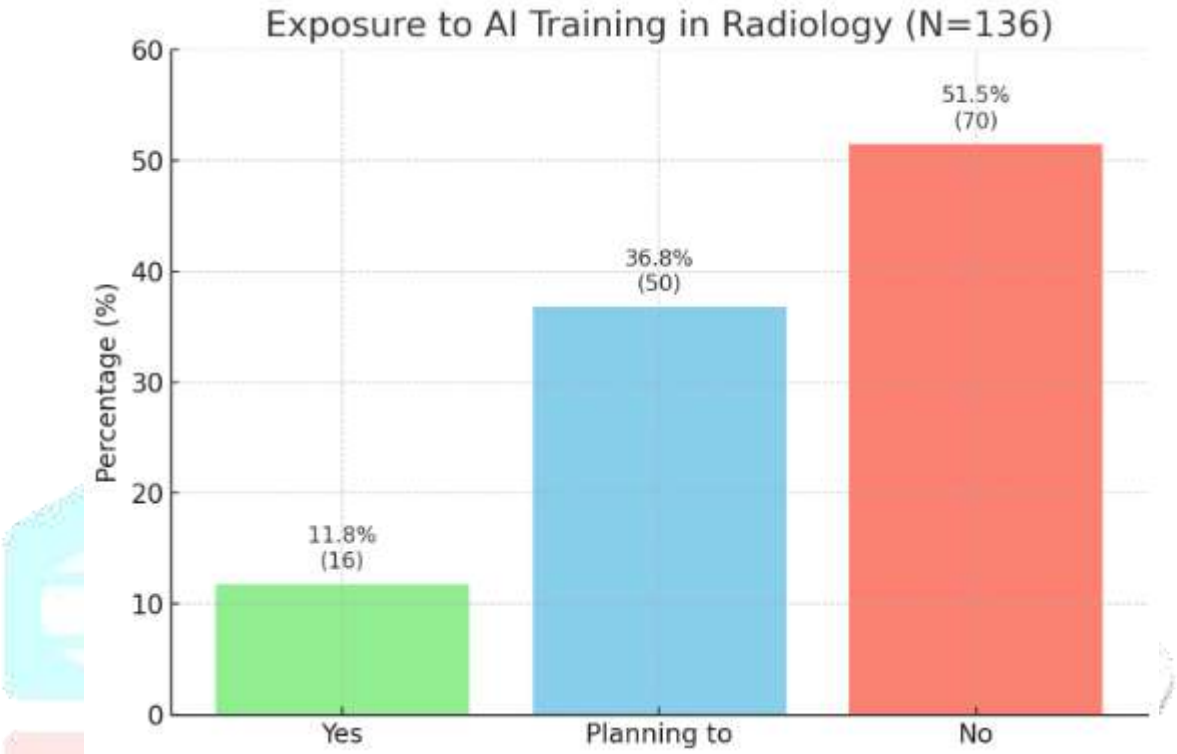


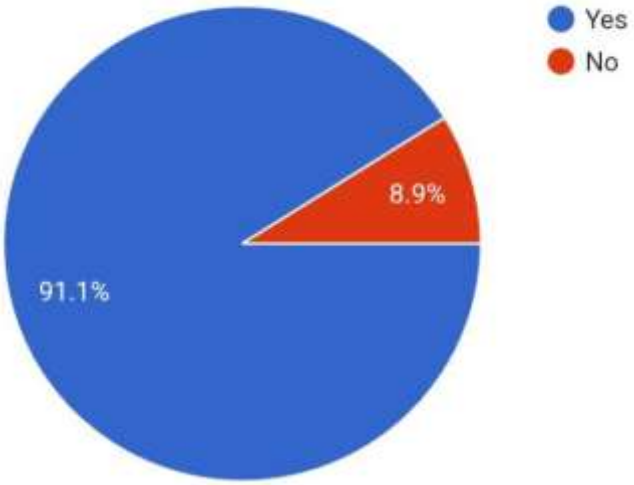
Table 5: Exposure to AI training in radiology among participants (N = 136).

Response	Percentage (%)	Count
Yes	11.8%	16
Planning to	36.8%	50
No	51.5%	70

12. Interest in Future AI Training

A vast majority (91.1%) expressed a willingness to attend AI training programs in the future, while only 8.9% were not interested. This result highlights strong motivation among respondents to improve AI literacy, reinforcing the need to incorporate AI education into formal radiology training.

Figure 9: Respondents' Interest in Attending AI Training Programs in the Future (N = 136).



Discussion

This survey explores the current awareness, understanding, and perception of artificial intelligence (AI) among radiology students and faculty, particularly in the context of CT and MRI imaging. The findings indicate a generally positive attitude toward AI, with the majority of participants acknowledging its growing relevance in diagnostic radiology. However, the results also underscore a significant gap between theoretical awareness and practical application.

A substantial proportion of respondents reported familiarity with AI concepts, reflecting a global trend in radiology education [1,2]. Widely recognized applications—such as image segmentation, lesion detection, and workflow optimization—are increasingly discussed in academic literature and are gradually being introduced into teaching environments [3,7]. Nevertheless, only a minority of participants had direct experience using AI tools, highlighting a persistent disconnect between knowledge and hands-on exposure. Similar trends have been documented in prior research, particularly in resource-limited settings [4,10].

While a subset of participants expressed concerns regarding the potential of AI to replace radiologists, the majority viewed AI as a supportive rather than substitutive tool. This aligns with prevailing expert opinion that AI is best positioned to assist radiologists by automating routine or repetitive tasks, thereby allowing more time for complex image interpretation, clinical decision-making, and patient interaction [3,6,8].

Importantly, the study revealed a strong interest in receiving AI-related training. Over 90% of respondents expressed willingness to attend formal instruction or workshops on AI, underscoring a critical opportunity for educational institutions. Previous studies have shown that structured AI training significantly enhances confidence and preparedness among radiology trainees [5,9]. Integrating such content into undergraduate and postgraduate curricula could help bridge the current competency gap.

However, several barriers were identified, including limited access to AI platforms, inadequate institutional infrastructure, and a shortage of trained faculty. These limitations mirror challenges reported in other low- and middle-income countries and point to the need for collaborative efforts between academia, healthcare systems, and industry stakeholders [10]. Developing affordable, accessible, and user-friendly AI training modules is essential to ensure equitable skill development across diverse settings.

In conclusion, while AI is widely accepted in theory, its translation into clinical and educational practice remains uneven. To bridge this gap, medical institutions must prioritize curriculum reform, resource

investment, and intersectoral collaboration. Strengthening AI literacy and practical competence will be critical in preparing the next generation of radiologists for an AI-enhanced healthcare environment.

Conclusion

This survey highlights that artificial intelligence (AI) is generally perceived positively by healthcare professionals engaged in CT and MRI imaging. While participants recognized the potential benefits of AI—such as enhanced diagnostic accuracy, workflow optimization, and operational efficiency—practical exposure and implementation remain limited in many clinical and academic settings.

The results underscore an urgent need for AI-focused educational initiatives, curriculum integration, and institutional investment to bridge the gap between theoretical understanding and hands-on application. Promoting interdisciplinary collaboration between radiologists, computer scientists, and healthcare administrators will be essential for the successful adoption of AI in diagnostic radiology.

With structured training, adequate infrastructure, and informed policy support, AI holds significant promise to augment the capabilities of radiology departments and improve patient outcomes in the evolving landscape of medical imaging.

Recommendations and Future Scope

- Regular workshops and hands-on training sessions should be conducted to enhance AI literacy among radiology professionals, including students and radiologic technologists.
- AI-related modules should be formally integrated into undergraduate and postgraduate curricula in radiology and medical imaging programs.
- Future studies should evaluate the clinical impact, diagnostic accuracy, and safety of AI-assisted imaging tools in routine practice.
- Large-scale, multicenter surveys across diverse regions of India are recommended to gain broader insight into the perceptions, challenges, and feasibility of AI implementation in radiological workflows.

Reference:

1. Erickson BJ, Korfiatis P, Akkus Z, Kline TL. Machine learning for medical imaging. *Radiographics*. 2017;37(2):505–15. https://doi.org/10.1148/rg.2017160130
2. Hosny A, Parmar C, Quackenbush J, Schwartz LH, Aerts HJWL. Artificial intelligence in radiology. *Nat Rev Cancer*. 2018;18(8):500–10. https://doi.org/10.1038/s41568-018-0016-5
3. Langlotz CP. Will artificial intelligence replace radiologists? *RadiolArtifIntell*. 2019;1(3):e190058. https://doi.org/10.1148/ryai.2019190058
4. Liew C. The future of radiology augmented with artificial intelligence: A strategy for success. *Eur J Radiol*. 2018;102:152–6. https://doi.org/10.1016/j.ejrad.2018.03.019
5. Tang A, Tam R, Cadrin-Chênevert A, et al. Canadian Association of Radiologists white paper on artificial intelligence in radiology. *Can Assoc Radiol J*. 2018;69(2):120–35. https://doi.org/10.1016/j.carj.2018.02.002
6. Topol EJ. High-performance medicine: The convergence of human and artificial intelligence. *Nat Med*. 2019;25(1):44–56. https://doi.org/10.1038/s41591-018-0300-7
7. McBee MP, Awan OA, Colucci AT, et al. Deep learning in radiology. *AcadRadiol*. 2018;25(11):1472–80. https://doi.org/10.1016/j.acra.2018.02.018
8. Pesapane F, Codari M, Sardanelli F. Artificial intelligence in medical imaging: Threat or opportunity? *EurRadiol Exp*. 2018;2(1):35. https://doi.org/10.1186/s41747-018-0061-6
9. Shen D, Wu G, Suk H-I. Deep learning in medical image analysis. *Annu Rev Biomed Eng*. 2017;19:221–48. https://doi.org/10.1146/annurev-bioeng-071516-044442

10. Wang CJ, Zhang Q, Wei Y, Li GY, Huang Y. AI applications in CT and MRI: Opportunities and challenges. *Front Oncol*. 2021;11:620820. https://doi.org/10.3389/fonc.2021.620820