RESEARCH PAPER

Analysing the Pulse of AI in Medicine: A KAP Study

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ABSTRACT
Artificial Intelligence (AI) technology has proven transformative in healthcare, offering tools for enhanced diagnostics and predictive analytics. However, its adoption has been limited due to barriers such as resource limitations and ethical concerns. This study explores the knowledge, attitudes, and practices (KAP) of clinicians regarding AI. A structured questionnaire was distributed among interns, postgraduate residents, and consultants to assess familiarity, usage, and perceptions. Results indicate that 70% have a basic understanding of AI, though only 40% are familiar with advanced concepts like machine learning. Barriers identified include resource constraints (100%), ethical concerns (80%), and technological complexity (40%). The study concludes that younger professionals are more willing to adopt AI, emphasizing the need for targeted education and infrastructure investments.
Keywords: Artificial Intelligence, KAP study, healthcare, machine learning, clinician perceptions.
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I. INTRODUCTION

Artificial Intelligence (AI) is reshaping the healthcare landscape, offering tools for more accurate diagnostics, personalized treatment, and improved efficiency. AI algorithms can analyze large datasets, detect patterns, and provide clinical decision support, which has immense potential to revolutionize healthcare delivery. Despite these advancements, adoption remains limited among clinicians due to challenges such as lack of awareness, ethical concerns, and insufficient infrastructure.

This study aims to explore the knowledge, attitudes, and practices (KAP) of clinicians toward AI, focusing on barriers to adoption and the potential strategies to integrate AI into routine clinical practice. By understanding clinicians' perspectives, we can identify actionable steps to foster AI adoption and maximize its benefits for patient care.

II. METHODS

This cross-sectional study employed a structured questionnaire targeting clinicians, including interns, residents, and consultants across specialties at Dr. D. Y. Patil Medical College Hospital, Pune. Participants were selected via convenience sampling to ensure representation from various departments.

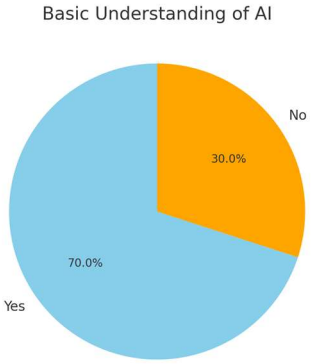
The questionnaire assessed three domains:
1. Knowledge: Familiarity with AI concepts like machine learning and deep learning.
2. Attitudes: Perceptions of AI's role in healthcare, interest in learning, and ethical concerns.
3. Practices: Usage of AI-based tools in clinical and research settings.

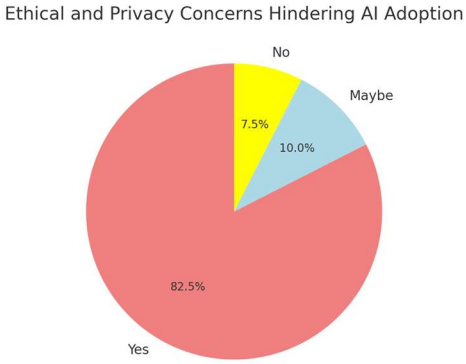
Descriptive statistics and correlation analyses were conducted to evaluate the data, while thematic analysis was applied to open-ended responses. Data were analyzed using statistical software to identify significant trends.

III. RESULTS

A. Knowledge and Awareness

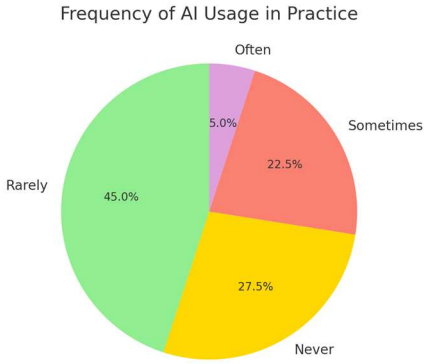
Among respondents, 70% reported having a basic understanding of AI, but only 40% were familiar with advanced concepts like machine learning and deep learning. Younger clinicians (below 35 years) were more likely to report familiarity with AI technologies. Fig. 1 illustrates this distribution.





B. Practice and Usage

AI usage in practice remains low; 20% of clinicians reported frequent usage, while 30% never used AI-based tools. The frequency of usage was highest among radiologists and pathologists, who rely on AI for image analysis. However, most clinicians cited a lack of accessible AI tools as a barrier to routine usage. The frequency distribution is depicted in Fig. 2.



C. Barriers to AI Adoption

Major barriers include resource limitations (100%), ethical and privacy concerns (80%), and the complexity of AI technologies (40%). Respondents emphasized the need for transparent AI tools with validated outcomes to build trust. Fig. 3 summarizes the respondents' perspectives on ethical and privacy concerns.

IV. CONCLUSION

This study highlights a significant gap between clinicians' awareness of AI and its practical implementation. While there is high interest in adopting AI (90%), barriers such as limited resources, ethical concerns, and technological complexity hinder its adoption. Younger clinicians demonstrate greater openness towards AI, emphasizing the need for targeted education and infrastructure investments.

To promote AI adoption, medical institutions should incorporate AI training into curricula and offer workshops to familiarize clinicians with AI tools. Policymakers must address ethical and regulatory challenges to ensure AI technologies are trustworthy and patient-centered. Future research should focus on longitudinal studies to assess the impact of AI education and infrastructure investments on clinician practices and patient outcomes.

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