

AI IN MEDICINE: WHAT MEDICAL STUDENTS KNOW AND THINK ABOUT ITS ETHICS

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Abstract

Background: Artificial intelligence (AI) is quickly changing healthcare.

Objective: This study looked at how familiar medical students are with AI, what they know about it, and how they feel about its use in medicine, especially regarding ethics and its potential impact.

Methods: The research was conducted at a medical college in Pakistan from July to December 2025. A total of 360 students from all years of medical school took part. They completed a survey about their background, AI knowledge, ethical views, and confidence in using AI.

Results: Results showed that while most students had attended AI lectures, their knowledge level was only moderate. Many were concerned about data privacy and accountability. Most students saw medical imaging as the main use of AI and believed it could improve patient care.

Conclusion: The study concludes that medical students are aware of AI but need more focused teaching on its ethical and practical sides to ensure it is used responsibly in healthcare.

Introduction

Artificial intelligence has grown rapidly with advances in deep learning. In medicine, AI is now used in areas like diagnostics, surgical simulations, and personalized learning. It can help students practice complex procedures without risk and analyse large amounts of health data. However, there are concerns that too much reliance on AI might reduce human interaction and empathy in patient care. Academic institutions also face challenges like preventing misuse of AI for assignments. This study aimed to understand how medical students view AI and its ethical issues to help shape better medical education.

Methods

This study was conducted at Benazir Medical College in Pakistan between July and December 2025. After getting ethical approval, 360 medical students from first to final year were invited to join. All had completed at least one year of study and had no formal AI training. Data was collected using an online questionnaire that asked about their knowledge, familiarity, and ethical views on AI in medicine. Responses were analysed using basic statistics and chi-square tests, with significance set at $p < 0.05$.

Results

Most students were aged 21–23 years, and slightly more than half were female. About 40% said they were moderately familiar with AI, and 60% had attended an AI seminar. The main uses of AI they identified were medical imaging (85%) and diagnostics (80%). Most rated their

confidence in using AI as medium. Many believed AI could improve patient outcomes (75%, $p=0.0006$). Ethical concerns were high, with 85% worried about data privacy and 80% about accountability for AI errors. Half said ethics training was very important ($p=0.0001$), while only 20% felt AI should play a direct role in clinical decisions ($p=0.0000$). Slightly over half had encountered AI ethics in their education, but this was not statistically significant ($p=0.317$). Most students did not think AI would replace doctors (85%, $p=0.000$). They saw improved diagnostic accuracy as the biggest benefit, and their main personal concerns were ethical issues and privacy. Most viewed AI's overall impact on healthcare as somewhat positive (60%, $p=0.000$).

Discussion

The findings show that medical students have moderate awareness of AI, which aligns with earlier studies [11, 12]. Students recognized AI's role in imaging and diagnostics, reflecting trends in the literature [12]. Their moderate confidence and belief that AI improves outcomes match previous research [13, 14]. Ethical concerns about data privacy and accountability were common, as seen in other studies [14]. The need for ethics training was clear, though exposure to the topic was uneven across students [13, 15]. Most students viewed AI as a support tool rather than a replacement for doctors, a finding consistent with other surveys [13, 15]. While the study included students from all years, its limitations include self-reported data and being from a single institution.

Conclusion

Medical students are aware of AI's role in medicine, especially in diagnostics and imaging, but they have strong ethical concerns. They see AI as an assistant, not a replacement for doctors. Medical curricula should include more education on AI to balance its benefits with ethical responsibilities.

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