

## 16. Confident but Underprepared? Medical Students' Perspectives Regarding Artificial Intelligence: A Cross-sectional Study from Sudan, 2024.

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**BACKGROUND:** Artificial intelligence (AI) is rapidly transforming healthcare by enhancing diagnostic accuracy, improving efficiency, and reducing costs. As AI becomes increasingly integrated into clinical practice, medical education must adapt to prepare future physicians for an AI enabled healthcare environment. Despite this, the integration of AI into undergraduate medical education remains limited in many low- and middle-income countries (LMICs), including Sudan. This gap raises concerns about the preparedness of medical graduates to engage with AI technologies in clinical practice. Understanding medical students' perspectives, acceptance, and educational needs is critical to inform the development of relevant and effective curricula. This study aimed to assess medical students' perceptions of AI, its impact on medical education, and evaluate their acceptance of AI integration and educational needs at the University of Khartoum, Sudan. **METHODS:** A descriptive cross-sectional study was conducted between June 26 and July 10, 2024, at the Faculty of Medicine, University of Khartoum. 350 medical students from first to fifth year were selected using systematic random sampling. Data were collected using a structured, self-administered online questionnaire to assess the study objectives. Data were analyzed using SPSS version 29. Descriptive statistics were reported as frequencies, mean, and standard deviation, while associations were examined using the Mann–Whitney U test and Monte Carlo Chi-square test. Statistical significance was set at  $p < 0.05$ . **RESULTS:** The majority of students (81.4%) believed AI would play an important role in healthcare, and 73.7% reported that AI teaching would benefit their future careers. However, students showed limited understanding of AI principles and limitations (35.2% and 40.2%, respectively). Despite this, approximately half of the students expressed confidence in their future ability to use AI tools (50.5%), assess AI performance (50.8%), and apply AI in routine clinical practice (50.0%) by the end of their medical degree. Most participants perceived AI as beneficial to medical education, with 82.5% agreeing it would have a positive impact and 83.1% believing it would facilitate learning. 67.2% supported the AI implementation into the medical curriculum. Female students demonstrated significantly higher acceptance of AI integration than males ( $p = 0.033$ ), while no significant association was found between acceptance and academic level ( $p = 0.98$ ). Students identified key educational needs, including AI applications (82.0%), public health analytics (79.7%), ethical considerations (79.1%), and AI in research (78.6%). **CONCLUSION:** This study highlights a mismatch between AI knowledge and confidence in its future use among medical students in Sudan. While students demonstrate strong interest in and support for AI integration into medical education, the observed knowledge–confidence gap raises concerns about preparedness for safe clinical application. These findings underscore the urgent need for structured AI curricula tailored to resource-limited settings to

bridge this gap and equip future physicians with the necessary skills to utilize AI in healthcare effectively.

**Key Words:** Artificial intelligence, medical education, medical students, perspective, Sudan. (Source: MeSH-NLM).

