Title
“The role of AI in the personalized Medical Education”

Authors:

*1)Zahra Kazemi Korani, Student Committee Of Medical Education and Development, Education and Development Center, Bam University of Medical Sciences, Bam, Iran

2)Shayan Fattahin Kelishadrokhi, Student Committee Of Medical Education and Development, Education and Development Center, Kashan University of Medical Sciences, Kashan, Iran

3)Sara Azimi, Student Committee Of Medical Education and Development, Education and Development Center, Mashhad University of Medical Sciences, Mashhad, Iran

*Corresponding Author Email: Kazemizahra1753@gmail.com

Background:

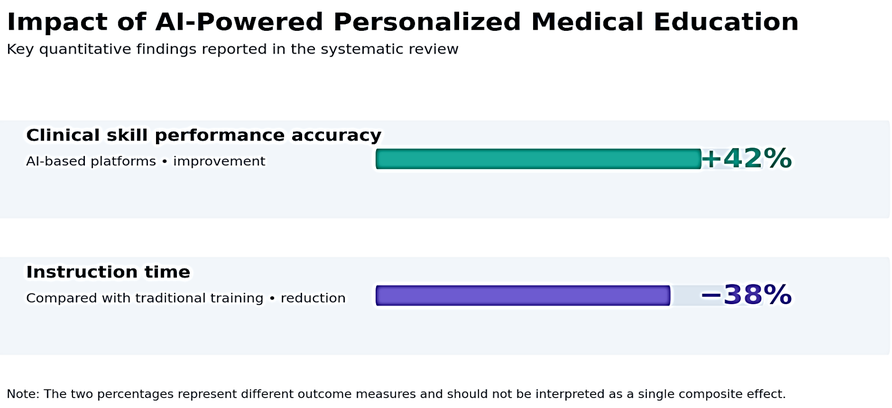
Despite the benefits of conventional medical education, faculty shortages and growing class sizes hinder individualized learning. Although medical AI emerged in the early 1970s, its role in early diagnosis and personalized care gained prominence during COVID-19. Yet, its integration into medical education remains limited. Studies reveal insufficient AI knowledge and application skills among future physicians, despite students’ interest in its concepts and uses. Integrating AI literacy and practical training into medical curricula is therefore essential to prepare future clinicians for AI-driven healthcare.

Methods:

Following PRISMA guidelines, we systematically searched PubMed, Scopus, Web of Science, MEDLINE, Embase, Eric, and Google Scholar for studies published between 2019 and 2025. Relevant MeSH terms and keywords related to Medical Education, Artificial Intelligence, and Personalized learning were applied. Two reviewers independently screened all records, resolving disagreements through discussion. Of 1790 initial records, 57 met the inclusion criteria. Study quality was assessed using the Cochrane RoB 2 tool.”

Results:

This review highlights a paradigm shift toward Precision Medical Education, where AI replaces time-based systems with personalized learning. By adapting content to individual learner profiles, AI addresses the limitations of one-to-one instruction (Bloom’s “2-Sigma” problem). Evidence suggests that adaptive AI improves clinical skill accuracy by 42% while reducing instructional time by 38%. Personalized tutoring and real-time feedback also enhance access and reduce geographical and socioeconomic disparities. However, balancing learner autonomy with structured educational objectives remains challenging, raising concerns about skill degradation, impaired critical thinking, algorithmic hallucinations, and reduced human empathy. Addressing these risks requires human-in-the-loop oversight and structured AI literacy programs.



Conclusion:

This review highlights AI’s potential to transform medical education by shifting from uniform, time-based training to personalized, learner-centered approaches. AI improves clinical skill accuracy, reduces learning time, and provides continuous feedback. However, risks to critical thinking, technological over-reliance, and ethical and professional practice necessitate structured curricula, AI literacy, and active human oversight.

