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THE ROLE OF ARTIFICIAL INTELLIGENCE IN ENHANCING MEDICAL EDUCATION: OPPORTUNITIES AND CHALLENGES

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Artificial intelligence (AI) is increasingly integrated into medical education, offering innovative tools for training future physicians. Many medical schools now test AI-based methods to help students learn faster and more safely. AI can simulate real clinical situations, which is especially useful when access to real patients is limited. This refereed report summarizes current applications, benefits, and limitations of AI in this field.

Modern AI applications include virtual patient simulations and chatbots that allow students to practice history taking and diagnosis without risk to real patients. These tools can repeat the same case many times, which is not always possible with real people. Some chatbots even adapt their responses based on the student's questions, creating a more realistic interaction. AI systems also assist in teaching medical image interpretation by highlighting findings on X-rays, CT, or MRI, while adaptive learning platforms tailor educational content to individual student performance. For example, if a student struggles with interpreting chest X-rays, the system can offer additional exercises on that topic. Furthermore, AI-enhanced augmented reality/virtual reality (AR/VR) simulators, such as those for surgical training, provide real-time feedback and objective metrics on technical skills. Students can practice the same procedure repeatedly until they master it.

Key advantages of AI are safe, repetitive practice, 24/7 availability of virtual tutors, and standardized, unbiased assessment of students' actions. Students can train at any hour without needing a human teacher present. This is especially helpful for those who work part-time or have irregular schedules. However, significant challenges remain. AI can give wrong answers that sound correct, so students must always check the information carefully. For example, a chatbot might describe a treatment that does not exist. AI lacks genuine empathy and cannot replace human mentorship. A computer cannot comfort a worried patient or understand cultural nuances in communication. Technological barriers (cost, hardware, internet access) may widen educational inequalities between rich and poor schools. Not every university can afford high-end VR headsets or fast internet connections. Ethical concerns regarding data privacy, informed consent, and algorithmic bias must also be addressed. If an AI is trained mainly on data from one population, it may perform poorly for other groups.

Future perspectives include continuous personalized AI tutors that follow students throughout their training and more immersive simulations for emergency and ethical scenarios. Some researchers believe AI will soon act as a learning companion for every medical student, offering advice and practice questions at any time. In conclusion, AI should complement, not replace, traditional teaching. With careful implementation, quality control, and instructor oversight, AI can significantly enhance medical education while preserving essential human values such as empathy and critical thinking. Medical schools should therefore invest in training both students and teachers on how to use AI tools responsibly.