Maximizing the potential of Artificial Intelligence in medicine while maintaining ethical standards and addressing limitations

Advait Teli[1], Jayashree S Gothankar[2]
[1]*Bharati Vidyapeeth (Deemed to be University), Medical College and Hospital, Pune, Maharashtra, India*
[2]*Department of Community Medicine, Bharati Vidyapeeth (Deemed to be University), Medical College and Hospital, Pune, Maharashtra, India*

Corresponding Author
Advait Teli
E-mail ID: teliadvait@gmail.com

Submission: 17.04.2023 Acceptance: 13.06.2023 Publication: 30.06.2023

https://www.doi.org/10.56136/BVMJ/2023_00034

Dear Sir,

We are writing to express our thoughts on the use of Artificial Intelligence (AI) in medicine. With the rapid advancement of technology, the integration of AI in healthcare has become more perceivable in recent years. While AI has begun revolutionizing the way we diagnose and treat patients, it is crucial to acknowledge its limitations and ensure its ethical and responsible use.

One major limitation of AI in medicine is the potential for reinforcing pre-existing biases or introducing new ones[(1)]. AI systems can analyze vast medical data and provide an accurate and precise diagnoses and treatment plans. However, AI will reinforce biases in diagnosis and treatment if the training data contains biases or discriminatory information. Moreover, the risk of over-reliance and misuse also exists.

Furthermore, there is a need for healthcare professionals to understand and use AI effectively. While AI can assist healthcare providers in decision-making, it cannot replace the human element of medical care. AI will complement and enhance the abilities of healthcare professionals. Thus, there exists no competition between AI and doctors. Rather, a "digital divide" exists between doctors using AI and those who do not[(2)]. The doctors taking the aid of AI, along with their clinical expertise, are most likely be able to provide better patient care[(3)].

Another limitation of AI in medicine is its vulnerability of errors and misinterpretations. The accuracy of AI systems is dependent on the internal consistency determined by the quality and quantity of data used. Therefore, it is crucial to validate and evaluate AI systems' performance continuously to prevent potential harm to patients. Such fallacies have been reported for the use of ChatGPT in medical practice. Zhuo et al. highlights the limitation of data, mainly low accuracy, and, most importantly, lack of context of the AI model[(4)].

Medicine being ever-evolving branch, there are frequent advances along with modifications in various existing guidelines. This poses a major limitation to the use of AI, as there is a constant need to train the model to new data. We found that ChatGPT has a knowledge cut-off of September 2021 as on 12th April 2023. Thus, any recent advances or changes in the field are not accounted for in the data generated.

In conclusion, the use of AI in medicine has the potential to significantly improve patient outcomes. However, it must be done ethically, responsibly, and with the aid of the clinical expertise of the doctor. The integration of AI technology should prioritize fairness, equity, and ethical principles that protect patient autonomy and privacy. It is important to recognize and address the limitations of AI in medicine to ensure its safe and effective use in patient care.

Conflict of Interest: Nil

Source of Support: Nil

ORCiD

Advait Teli 0009-0009-9614-3375

References

1. King MR. The future of AI in medicine: A perspective from a Chabot. Ann Biomed Eng. 2023 Feb;51(2): 291-5.
2. Gothankar JS, Doke PP, Murarkar SK. Digital technology for improving health. Indian Journal of Public Health. 2022 Oct 1;66(4):399-400.
3. Kung TH, Cheatham M, Medenilla A, et al. Performance of ChatGPT on USMLE: Potential for AI-assisted medical education using large language models. PLoS digital health. 2023 Feb 9;2(2):e0000198.
4. Biswas SS. Role of Chat GPT in Public Health. Ann Biomed Eng. 2023 Mar 15:1-2.