



Potential Applications of ChatGPT in the Healthcare Industry of Low- and Middle-Income Countries

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Dear Editor,

The healthcare industry, as one of the most sensitive and complex sectors, is constantly seeking new solutions to enhance service quality and productivity. The healthcare systems of low- and middle-income countries (LMICs) are often constrained by shortages of medical personnel, overcrowded facilities, and limited budgets (1). In response to these challenges, Artificial Intelligence (AI) has gained increasing attention (2). Among various AI innovations, one of the most promising technologies is ChatGPT (3). Studies have shown that ChatGPT has facilitated medical education (4, 5), supported chronic disease management (6), and enhanced health communication (7). This article aims to explore the potential applications of ChatGPT in the healthcare systems of LMICs.

Health Education and Awareness in LMICs

ChatGPT serves as a potential provider of accessible and unrestricted health information, particularly in LMICs. It explains complex medical topics in simple language, enabling people to receive detailed information about vaccination, nutrition, and maternal care. Yeo et al. demonstrated that ChatGPT can provide reliable information regarding hepatocellular carcinoma and cirrhosis, highlighting its potential as a valuable tool for improving awareness of chronic diseases in LMICs (7). Furthermore, during the monkeypox outbreak, ChatGPT provided the public with useful information on its symptoms and transmission (8).

Medical Education and Capacity Building

ChatGPT is proving to be a valuable tool in medical education by assisting students and healthcare professionals in developing their communication, problem-solving, and critical thinking skills (9). Medical education often requires students to understand complex concepts, and AI tools like ChatGPT can simplify these topics by offering quick and accurate responses and generating summaries of extensive medical literature (10). AI-assisted platforms like ChatGPT also help medical students and researchers throughout their academic journeys (11). It supports the creation of detailed medical records and provides writing feedback, especially beneficial for non-native English speakers (4). Additionally, ChatGPT grants easy access to a broad range of healthcare literature, helping users stay updated on the latest medical advancements. It can also generate educational materials such as tutorials, training videos, and online courses, making learning more accessible worldwide (5). Studies have shown that ChatGPT can assist in mastering medical concepts and perform reasonably well on exams like the USMLE (5). Given the shortage of faculty and limited educational resources in LMICs, ChatGPT can help bridge training gaps by offering explanations, summarizing research, and supporting academic writing.

Enhancing Telemedicine and Patient Communication

Telemedicine is in high demand in LMICs due to limited healthcare facilities and long travel distances. AI tools like ChatGPT can support healthcare personnel by triaging symptoms, answering common health-related

queries, and providing basic healthcare advice and follow-up instructions to the public (12). Its continuous availability and multilingual capabilities can ease the burden on healthcare systems and help bridge communication gaps between patients and providers.

Chronic Disease Management Support

ChatGPT can act as a virtual health coach, offering real-time educational resources, monitoring support, and treatment reminders (6, 13). One of its key strengths lies in the prevention and early detection of chronic illnesses through the analysis of individual health data such as age, sex, medical history, and lifestyle. Diabetes and hypertension are rising rapidly in LMICs, where many patients lack access to healthcare settings. ChatGPT's accessibility makes it a convenient and adaptable solution for managing health concerns remotely (14). It can offer lifestyle advice, treatment adherence support, and emotional assistance, all of which are important for chronic disease care (6).

Administrative Assistance and Workflow Efficiency

Excessive administrative workload is a common challenge in LMICs. ChatGPT can streamline daily tasks such as patient registration, appointment scheduling, and clinical documentation. These features save time for healthcare providers, allowing them to focus more on patient care (15). Additionally, AI tools like ChatGPT can assist smaller clinics in maintaining accurate patient records and reducing data entry errors.

Challenges and Ethical Considerations

While ChatGPT is a valuable tool for multiple healthcare tasks (16), integrating it into LMICs presents challenges. These include limited internet access, gaps in digital literacy, concerns about data privacy, and the risk of overdependence on AI without sufficient human oversight. Moreover, ChatGPT and similar tools are not currently approved by major health bodies such as the WHO or FDA. Therefore, their usage should be considered experimental and supportive, rather than a replacement for clinical judgment (12, 17, 18). Proper implementation will require clear regulations, local adaptation, and ongoing evaluation to ensure safety and ethical use.

Conclusions

In summary, ChatGPT offers numerous potential applications in healthcare, ranging from diagnosis and education to research and administration. As one of the most advanced AI tools in medicine today, it is transforming how healthcare professionals deliver care by increasing efficiency, accuracy, and accessibility. The future of ChatGPT in healthcare appears promising,

with ongoing AI advancements continuing to expand its capabilities. With appropriate regulation and ethical oversight, ChatGPT has the potential to revolutionize healthcare delivery, especially in low- and middle-income countries. In these regions, it could play a pivotal role in addressing workforce shortages, improving health literacy, and enhancing access to quality medical services.

Footnotes

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References

1. Mohammadi S, Mohammadi S, SeyedAlinaghi S, Heydari M, Pashaei Z, Pashaei Z, et al. Artificial Intelligence in COVID-19 Management: A Systematic Review. *J Comput Sci.* 2023;19(5):554-68. <https://doi.org/10.3844/jcssp.2023.554.568>.
2. Akbarialabad H, Sadeghian N, Haghighat S, Grada A, Paydar S, Haghighi A, et al. The Utility of Generative AI in Advancing Global Health. *Nejm Ai.* 2025;2(3). <https://doi.org/10.1056/Aip2400875>.
3. Afsahi AM, Seyed Alinaghi SA, Molla A, Mirzapour P, Jahani S, Razi A, et al. Chatbots Utility in Healthcare Industry: An Umbrella Review. *Front Health Inform.* 2024;13. <https://doi.org/10.30699/fhi.v13i0.561>.
4. Seetharaman R. Revolutionizing Medical Education: Can ChatGPT Boost Subjective Learning and Expression? *J Med Syst.* 2023;47(1):61. [PubMed ID: 37160568]. <https://doi.org/10.1007/s10916-023-01957-w>.
5. Gilson A, Safranek CW, Huang T, Socrates V, Chi L, Taylor RA, et al. How Does ChatGPT Perform on the United States Medical Licensing Examination (USMLE)? The Implications of Large Language Models for Medical Education and Knowledge Assessment. *JMIR Med Educ.* 2023;9. e45312. [PubMed ID: 36753318]. [PubMed Central ID: PMC9947764]. <https://doi.org/10.2196/45312>.
6. Al-Anezi FM. Exploring the use of ChatGPT as a virtual health coach for chronic disease management. *Learn Health Syst.* 2024;8(3). e10406. [PubMed ID: 39036525]. [PubMed Central ID: PMC11257053]. <https://doi.org/10.1002/lrh2.10406>.
7. Yeo YH, Samaan JS, Ng WH, Ting PS, Trivedi H, Vipani A, et al. Assessing the performance of ChatGPT in answering questions regarding cirrhosis and hepatocellular carcinoma. *Clin Mol Hepatol.*

- 2023;**29**(3):721-32. [PubMed ID: [36946005](#)]. [PubMed Central ID: [PMCI0366809](#)]. <https://doi.org/10.3350/cmh.2023.0089>.
8. Hasnain M. ChatGPT Applications and Challenges in Controlling Monkey Pox in Pakistan. *Ann Biomed Eng.* 2023;**51**(9):1889-91. [PubMed ID: [37149512](#)]. <https://doi.org/10.1007/s10439-023-03231-z>.
9. Zarei M, Zarei M, Hamzehzadeh S, Shakeri Babil Oliyaei S, Hosseini M. ChatGPT, a Friend or a Foe in Medical Education: A Review of Strengths, Challenges, and Opportunities. *Shiraz E-Med J.* 2024;**25**(6). <https://doi.org/10.5812/semj-145840>.
10. Cheng K, Li Z, Guo Q, Sun Z, Wu H, Li C. Emergency surgery in the era of artificial intelligence: ChatGPT could be the doctor's right-hand man. *Int J Surg.* 2023;**109**(6):1816-8. [PubMed ID: [37074733](#)]. [PubMed Central ID: [PMCI0389530](#)]. <https://doi.org/10.1097/J9.0000000000000410>.
11. Gupta R, Park JB, Bisht C, Herzog I, Weisberger J, Chao J, et al. Expanding Cosmetic Plastic Surgery Research With ChatGPT. *Aesthet Surg J.* 2023;**43**(8):930-7. [PubMed ID: [36943815](#)]. <https://doi.org/10.1093/asj/sjad069>.
12. Dave T, Athaluri SA, Singh S. ChatGPT in medicine: an overview of its applications, advantages, limitations, future prospects, and ethical considerations. *Front Artif Intell.* 2023;**6**:1169595. [PubMed ID: [37215063](#)]. [PubMed Central ID: [PMCI0192861](#)]. <https://doi.org/10.3389/frai.2023.1169595>.
13. Yazdanpanahi P, Atighi F, Keshtkar A, Hamidi R, Rezaeimanesh M, Karimi A, et al. The Current Progress of Artificial Intelligence in Approach to Thyroid Nodules: A Narrative Review. *Shiraz E-Med J.* 2024;**25**(11). <https://doi.org/10.5812/semj-148493>.
14. Sharma S, Pajai S, Prasad R, Wanjari MB, Munjewar PK, Sharma R, et al. A Critical Review of ChatGPT as a Potential Substitute for Diabetes Educators. *Cureus.* 2023;**15**(5). <https://doi.org/10.7759/cureus.38380>.
15. Kocakoç İD. The Role of Artificial Intelligence in Health Care. In: Bozkuş Kahyaoğlu S, editor. *The Impact of Artificial Intelligence on Governance, Economics and Finance, Volume 2*. Singapore: Springer; 2022. p. 189-206. https://doi.org/10.1007/978-981-16-8997-0_11.
16. SeyedAlinaghi S, Abbaspour F, Mehraeen E. The Challenges of ChatGPT in Healthcare Scientific Writing. *Shiraz E-Med J.* 2023;**25**(2). <https://doi.org/10.5812/semj-141861>.
17. Zheng Y, Sun X, Kang K, Zhao A, Wu Y. Breast cancer in the era of generative artificial intelligence: assistant tools for clinical doctors based on ChatGPT. *Int J Surg.* 2024;**110**(8):5304-5. [PubMed ID: [38716874](#)]. [PubMed Central ID: [PMCI1325887](#)]. <https://doi.org/10.1097/J9.0000000000001597>.
18. Vats K. Navigating the Digital Landscape: Embracing Innovation, Addressing Challenges, and Prioritizing Patient-Centric Care. *Cureus.* 2024;**16**(4). e58352. <https://doi.org/10.7759/cureus.58352>.