Editorial in Health Policy

Improving health literacy with artificial intelligence

Nazila NEJHADDADGAR[1], Fatemeh DARABI[2], Francesco CHIRICO[3], Murat YILDIRIM[4], Arash ZIAPOUR[5*]

Affiliations:

[1]*Department of Public Health, School of Health, Ardabil University of Medical Sciences, Ardabil, Iran. Email: naziladadgar60@gmail.com.* **ORCID:** *0000-0003-2230-8834.*

[2]*Department of Public Health, Asadabad School of Medical Sciences, Asadabad, Iran. Email: fatemedarabi43@yahoo.com.* **ORCID:** *0000-0002-4399-1460.*

[3]*Post-Graduate School of Occupational Health, Università Cattolica del Sacro Cuore, Rome, Italy. Health Service Department, Italian State Police, Ministry of the Interior, Milan, Italy. Email: francesco.chirico@unicatt.it.* **ORCID:** *0000-0002-8737-4368.*

[4]*Department of Psychology, Ağrı İbrahim Çeçen University, Turkey, Email: muratyildirim@agri.edu.tr.* **ORCID:** *0000-0003-1089-1380.*

[5]*Cardiovascular Research Center, Health Institute, Imam-Ali Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran. Email: arashziapour@gmail.com.* **ORCID:** *0000-0001-8687-7484.*

*Corresponding Author:

Arash Ziapour, Cardiovascular Research Center, Health Institute, Imam-Ali Hospital, Kermanshah University of Medical Sciences, Kermanshah, Iran. Email: arashziapoor@gmail.com

Artificial intelligence (AI) is beginning to influence the healthcare system and self-care education programs. The widespread availability of smartphones and other mobile devices has facilitated ubiquitous access to information technology for consumers worldwide [1]. Recent advances in AI in health and self-care training have sparked public discourse about the efficacy of AI in improving health literacy and ultimately improving societal well-being. Relevant definitions focus on health literacy at the core of people's competence, not only knowledge acquisition but also access to capabilities, comprehension, evaluation, and application of information. , This facilitates coping with health and managing it with better support. In other words, this involves engaging the person with the relevant matters related to their well-being and health [2].

Health-literate people can make better decisions about their health, demonstrate higher adherence to treatments and self-management practices, and contribute to raising awareness among others [3]. Access to health care and education does not necessarily guarantee increased knowledge or ability in medication adherence, but rather understanding the medications being taken, their purpose, and their impact on individuals' health —in other words, it includes better health literacy and active engagement with the subject matter [4]. The data and information related to health and how to present them to the audience are growing exponentially. Many fields are turning to AI to understand the concept of information and provide meaningful and practical insights tailored to the needs and goals of different audiences. AI can potentially improve healthcare and hospitals' drug discovery,

development, and manufacturing processes. It can also enhance and personalize audience interactions with physicians and care providers, serving as a valuable means across different care aspects, from prevention and self-care training to treatment and evaluation. AI has become essential for improving healthcare and advancing health literacy to make self-care programs more user-friendly and, more importantly, personalized [5].

Since audience-oriented and customer-oriented are the keys to healthcare's success and health literacy improvement, AI is a suitable platform for this purpose with the personalization of care [6]. In addition, AI has the potential to bridge the gap between healthcare providers and all segments of society by simplifying complex medical and educational information alongside terminology.
Through personalized and participatory learning, AI makes healthcare knowledge more accessible to the general public. It can help individuals better understand diagnoses, treatment options, and related side effects and self-management, enabling them to make more informed decisions about their health care, aligning with health literacy [7]. However, one important barrier to achieving health literacy is the accurate understanding of the concepts conveyed by healthcare professionals. In particular, people unfamiliar with specialized terms and concepts may experience challenges accessing care and, more importantly, engaging in self-care practices, leading to increased health complications and, subsequently, more expensive care [8].

The rise in chronic diseases has resulted in an increasing number of patients with multiple illnesses, which requires regular medications and self-management training. One thing that often happens to patients is to forget to take doses, frequently resulting in the misconception that they can compensate by taking a double dose at once [9]. With the help of AI, healthcare providers can explain to patients in simple terms the reasons for not exceeding the prescribed dose, as well as the complications related to overdose. This feature can potentially increase medication adherence, thus enabling patients to manage their conditions [10]. In other words, the patient-recipient engagement aspect of health services that improve health literacy may be enhanced by AI. Also, with AI, users can check their symptoms through an interactive platform, receive health advice on the condition, and access the contact information of relevant health providers. Tailoring training based on the needs of each patient, personal health literacy is the degree to which patients can find, understand, and use information and services to inform health-related decisions and actions for themselves and others. Two-way interaction between the recipient and the trainer is crucial to improving health literacy. Personalization is the key to improving people's health literacy in the contemporary world, and AI is vital in facilitating this process. Therefore, we believe that the approach of making smart and using the capacity of AI should be prioritized in interventions to improve patients' health literacy.

References

1. Hussain A, Malik A, Halim MU, Ali AM. The use of robotics in surgery: a review. Int J Clin Pract. 2014;68(11):1376-1382.
2. Marshall S, Sahm L, McCarthy S. Health literacy in Ireland: reading between the lines. Perspect Public Health. 2012;132(1):31-38.
3. Adams SJ, Tang R, Babyn P. Patient perspectives and priorities regarding artificial intelligence in radiology: opportunities for patient-centered radiology. J Am College Radiolo. 2020;17(8):1034-1036.

4. Chu Y-T, Huang R-Y, Chen TT-W, Lin W-H, Tang JT, Lin C-W, et al. Effect of health literacy and shared decision-making on choice of weight-loss plan among overweight or obese participants receiving a prototype artificial intelligence robot intervention facilitating weight-loss management decisions. Digit Health. 2022;8:20552076221136372.
5. Ryan K, Dockray S, Linehan C. A systematic review of tailored eHealth interventions for weight loss. Digit Health. 2019;5:2055207619826685.
6. Van Rhoon L, Byrne M, Morrissey E, Murphy J, McSharry J. A systematic review of the behaviour change techniques and digital features in technology-driven type 2 diabetes prevention interventions. Digit Health. 2020;6:2055207620914427.
7. Park E, Kwon M. Testing the digital health literacy instrument for adolescents: cognitive interviews. J Med Int Res. 2021;23(3):e17856.
8. Hoang Thi Ngoc S, Le Thi Thanh T, Vo Thi Ngoc H. Digital Health Literacy among Healthcare Students in Da Nang, Vietnam: A Cross-Sectional Survey. J Health Lit. 2023;8(2):12-24.
9. Nejhaddadgar N, Darabi F. Media literacy and health information epidemic. Payesh Health Mon. 2023;22(3):355-388.
10. Frings D, Sykes S, Ojo A, Rowlands G, Trasolini A, Dadaczynski K, et al. Differences in digital health literacy and future anxiety between health care and other university students in England during the COVID-19 pandemic. BMC Public Health. 2022;22(1):658.