

What Is the Role of AI in Global Health Equity?

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Abstract

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Introduction

Artificial Intelligence (AI) is rapidly transforming the healthcare landscape, offering unprecedented opportunities to address some of the most pressing challenges in global health. One of the most significant areas where AI can make a substantial impact is in promoting health equity. Health equity, the principle that everyone should have a fair and just opportunity to attain their full health potential, remains a major challenge globally. This article explores the role of AI in bridging the global health equity gap, examining its applications, benefits, and the challenges that need to be addressed for its successful and ethical implementation.

The Current State of Global Health Inequity

Health inequalities are not a new phenomenon. For decades, significant disparities in health outcomes have persisted between different population groups. These disparities are driven by a complex interplay of social, economic, and environmental factors, often referred to as the social determinants of health. Access to quality healthcare, education, economic stability, and safe living environments are not equally distributed, leading to avoidable differences in health status. For instance, individuals in low-income countries and marginalized communities within high-income nations often face a disproportionate burden of disease, higher mortality rates, and limited access to essential health services [1]. The digital divide further exacerbates these inequities, as the increasing reliance on technology in healthcare risks leaving behind those with limited digital literacy or access to digital infrastructure [2].

How AI Can Drive Health Equity

AI has the potential to be a powerful catalyst for change, addressing health inequities in several key ways:

1. Enhancing Access to Care

One of the most significant barriers to health equity is the lack of access to healthcare services, particularly in remote and underserved areas. AI-powered telemedicine platforms can bridge this gap by providing remote consultations, diagnostics, and monitoring. For example, AI-driven triage systems can help patients in rural communities determine the urgency of their health concerns and connect them with the appropriate healthcare providers, reducing travel time and costs [2]. Furthermore, AI-powered mobile health applications can provide individuals with personalized health information and support, empowering them to manage their health more effectively.

2. Improving Diagnostics and Clinical Decision-Making

AI algorithms can analyze medical images, such as X-rays and retinal scans, with a level of accuracy that can match or even exceed that of human experts. This is particularly valuable in resource-limited settings where access to specialists like radiologists and ophthalmologists is scarce. For instance, AI-powered systems for detecting diabetic retinopathy from retinal fundus photographs have shown great promise in improving early detection and preventing vision loss in diabetic patients in underserved communities [3]. By providing accurate and timely diagnoses, AI can help ensure that all patients, regardless of their location, receive the appropriate care.

3. Addressing Health Disparities through Data

AI can be used to analyze large datasets to identify patterns and social determinants of health that contribute to health disparities. By understanding the root causes of these inequities, healthcare providers and policymakers can develop targeted interventions to address them. For example, natural language processing (NLP) can be used to extract information about social determinants of health from electronic health records, such as housing instability or food insecurity, which can then be used to connect patients with the appropriate social services [2].

Challenges and Ethical Considerations

While the potential of AI to advance health equity is immense, it is crucial to acknowledge and address the associated challenges and ethical considerations:

1. Algorithmic Bias

AI models are trained on data, and if the data reflects existing biases, the AI will perpetuate and even amplify them. For example, if an AI algorithm is trained on data that is not representative of the diversity of the global population, it may not perform as accurately for certain ethnic groups, leading to misdiagnoses and health disparities [2]. It is essential to ensure that AI systems are developed and validated using diverse and inclusive datasets to mitigate this risk.

2. The Digital Divide

The benefits of AI in healthcare can only be realized if people have access to the necessary digital infrastructure and literacy. The digital divide, the gap between those who have access to technology and those who do not, remains a significant barrier to health equity. It is crucial to invest in digital infrastructure and education to ensure that everyone can benefit from AI-powered healthcare solutions [2].

3. Transparency and Accountability

Many AI algorithms are complex and opaque, making it difficult to understand how they arrive at their conclusions. This lack of transparency can be a major challenge in healthcare, where it is essential to be able to explain and justify clinical decisions. It is important to develop AI systems that are transparent and interpretable, and to establish clear lines of accountability for their use [1].

4. Community Engagement

To ensure that AI solutions are effective and culturally appropriate, it is essential to engage with the communities they are intended to serve. Co-designing AI solutions with community members can help to ensure that they meet their needs and are implemented in a way that is acceptable and sustainable [2].

Conclusion

Artificial intelligence holds the promise of revolutionizing global health and advancing health equity. By enhancing access to care, improving diagnostics, and providing data-driven insights into health disparities, AI can help to create a world where everyone has the opportunity to achieve their full health potential. However, the path to equitable AI in healthcare is not without its challenges. Addressing algorithmic bias, bridging the digital divide, ensuring transparency and accountability, and fostering community engagement are all critical to ensuring that AI is a force for good in global health. By embracing a responsible and ethical approach to AI development and implementation, we can harness its transformative power to build a more just and equitable healthcare future for all.

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