HARNESSING ARTIFICIAL INTELLIGENCE FOR IMPROVING PUBLIC HEALTH OUTCOMES EQUITABLY

Reality or rhetoric? - A narrative review

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SUMMARY

Healthcare and public health AI systems must carefully consider equity of outcomes for all people in all communities. This review outlines four key considerations to allay current unintended consequences of the health improvement AI revolution.

RESULTS

Four key themes emerged as actions to mitigate health inequities when using AI technology in healthcare:

Transparency and explainable AI: This advocates promotion of explainable AI, which explains the AI systems' training process and how it reaches its conclusions. It emphasizes the need to involve and educate clinicians and patients including those from marginalized groups, on AI development.

Data Diversity: Inclusion of diverse and more representative datasets and for addressing the underrepresentation of marginalized populations within datasets used to train AI algorithms

Ethical Governance: Employment of regulatory standards that ensure the ethical use of AI during the Total AI development lifecycle. These frameworks must ensure that developers consider, analyse, and optimise the impact on equity at each phase of the AI lifecycle, including post-development.

Ongoing monitoring: Continuous monitoring, evaluation, and adaptation of AI systems in real-world settings using the gathered feedback to assess and potentially re-conceptualize or adjust the models.

INTRODUCTION

Healthcare delivery in the UK is in the midst of an AI revolution. AI-enabled technologies leverage data to train models to support in decision-making, diagnosis, disease surveillance and resource allocation. However, the expansion of AI in healthcare must carefully consider the challenges it poses to health equity. Well-designed algorithms can play a key role in rectifying health disparities; however, the current state of existing AI models present inherent challenges in terms of propagating racial and socioeconomic inequities. This paper aims to review the existing literature to put forward key recommendations for limiting inequities when using AI in healthcare delivery.

CONCLUSION

This review emphasises the need for embedding equity within the development of AI systems to achieve equitable patient outcomes. Inclusive data collection, debiasing methods, and developing ethics guidelines are necessary to prevent perpetuating social and racial inequities. We encourage national and local healthcare systems to enforce regulatory frameworks mandating equity assessments during AI model lifecycle.

METHODS

We identified articles from journal and grey literature. The search was conducted using MEDLINE, PubMed, IEEE Xplore and Google scholar with search terms including "Artificial Intelligence" AND "Health inequities." The inclusion criteria for non-journal sources focused on the relevance to the topic and the credibility of the source. Fifty-four studies were identified following initial screening, with thirteen duplicates removed. Forty-one articles were reviewed, with sixteen articles included in the review.

