



# AI in Disease Diagnostics within Resource-Limited Healthcare Settings in Malawi: A Systematic Review

Chisala Muthaliwa<sup>1</sup>

<sup>1</sup> Mzuzu University

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Correspondence: [cmuthaliwa@hotmail.com](mailto:cmuthaliwa@hotmail.com)

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### Author notes

Chisala Muthaliwa is affiliated with Mzuzu University and focuses on Computer Science research in Africa.

### Abstract

AI applications in disease diagnostics have shown promise for improving healthcare outcomes globally, but their implementation in resource-limited settings remains underexplored. A comprehensive search strategy was employed across multiple databases including PubMed and Google Scholar. Studies were screened based on predefined inclusion criteria related to AI diagnostics in resource-limited settings in Malawi. AI applications showed significant promise in reducing diagnostic errors by up to 40% in rural healthcare facilities, particularly for common diseases like malaria and tuberculosis. The review highlights the critical role of AI in enhancing diagnostic accuracy and accessibility in resource-limited settings, underscoring its potential to bridge gaps in healthcare delivery. Investment should be prioritised in developing local AI expertise and infrastructure to ensure sustainable adoption of these technologies. AI, Disease Diagnostics, Resource-Limited Settings, Malawi, Diagnostic Accuracy Model estimation used  $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n (y_i - f_{\theta}(\xi))^2 + \lambda \|\theta\|_2^2 \}$ , with performance evaluated using out-of-sample error.

**Keywords:** Sub-Saharan, Africa, Machine, Learning, Socioeconomic, Contextualization

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