AI Applications in Malawi's Resource-Limited Healthcare Settings for Disease Diagnosis: A Systematic Literature Review

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Abstract

The rapid advancement of artificial intelligence (AI) has led to its integration into various healthcare settings worldwide, including resource-limited environments such as those in Malawi where AI applications for disease diagnosis are particularly relevant. A comprehensive search strategy was employed using multiple databases such as PubMed, Scopus, and Google Scholar. Studies were selected based on predefined inclusion criteria related to AI applications in disease diagnosis within healthcare settings in Malawi. AI-based diagnostic tools have demonstrated moderate accuracy (75% sensitivity with a 95% confidence interval of ±10%) across various diseases prevalent in Malawian healthcare, particularly in resource-limited settings where traditional diagnostic methods are less accessible or effective. The integration of AI into disease diagnosis in Malawi's healthcare systems has shown promise but requires further validation and implementation to ensure reliability and accessibility within the local context. Future research should focus on developing AI models tailored specifically for Malawian healthcare needs, conducting larger-scale studies with diverse patient populations, and exploring ways to improve the sustainability of these technologies in resource-limited settings. Model estimation used $\hat{\theta} = argmin\{\theta\} sumi ell(yi, f\theta(\xi)) + \lambda lVert \theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, machine learning, predictive modelling, data mining, resource allocation, healthcare informatics, telemedicine*

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