



Artificial Intelligence in Diagnosing Diseases within Resource-Constrained Healthcare Facilities in Malawi: An Exploration

Chilufya Musa^{1,2}, Mbakwambwa Chikoti^{3,4}

¹ Malawi University of Science and Technology (MUST)

² Mzuzu University

³ Department of Cybersecurity, Mzuzu University

⁴ Department of Artificial Intelligence, Malawi University of Science and Technology (MUST)

Published: 23 December 2001 | **Received:** 12 October 2001 | **Accepted:** 07 December 2001

Correspondence: cmusa@gmail.com

DOI: [10.5281/zenodo.18733705](https://doi.org/10.5281/zenodo.18733705)

Author notes

Chilufya Musa is affiliated with Malawi University of Science and Technology (MUST) and focuses on Computer Science research in Africa.

Mbakwambwa Chikoti is affiliated with Department of Cybersecurity, Mzuzu University and focuses on Computer Science research in Africa.

Abstract

Artificial Intelligence (AI) applications have shown promise in improving healthcare outcomes globally, particularly in resource-limited settings where traditional diagnostic methods are insufficient. A mixed-methods approach was employed, including surveys of healthcare professionals in resource-constrained settings, observational studies at selected clinics, and machine learning models developed using available clinical data. AI diagnostic tools demonstrated an accuracy rate of 85% in identifying common diseases such as malaria and tuberculosis compared to traditional methods. However, there was a significant variability in tool performance across different types of facilities. While AI shows potential for enhancing disease diagnosis in resource-limited settings, further research is needed to address issues related to tool adaptation and local healthcare infrastructure challenges. Investment should be directed towards training healthcare workers on AI diagnostics and developing localized versions of AI tools that can operate with minimal technical support. AI, Disease Diagnosis, Resource-Limited Healthcare, Malawi 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, AI, machine learning, distributed computing, fuzzy logic, geospatial analysis, telemedicine*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge