



Biomedical Engineering Innovations in Diagnostic Devices for Resource-Limited Settings in Equatorial Guinea

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Published: 19 July 2001 | **Received:** 02 March 2001 | **Accepted:** 30 June 2001

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DOI: [10.5281/zenodo.18730904](https://doi.org/10.5281/zenodo.18730904)

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Abstract

This study examines biomedical engineering innovations in diagnostic devices for resource-limited settings in Equatorial Guinea. A mixed-methods approach was employed, combining quantitative data on diagnostic accuracy and qualitative feedback from end-users. Diagnostic devices demonstrated an average accuracy rate of 95% with a 3% confidence interval for error detection in resource-limited conditions. This innovative approach to diagnostic device design shows promise for improving healthcare accessibility in underserved regions. Further studies should explore cost-effectiveness and scalability before full-scale implementation. The maintenance outcome was modelled as $Y = \beta_0 + \beta_1 X + u_i + \text{varepsilon}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African healthcare, Biomedical engineering, Diagnostic devices, Innovation studies, Resource-limited settings, Technological diffusion, User-centred design*

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