Biomedical Innovations in Diagnostic Devices for Resource-Limited Settings in Mozambique

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Abstract

Biomedical innovations are critical for improving healthcare access in resource-limited settings such as Mozambique, where diagnostic devices play a vital role. A mixed-method approach was employed, including literature review, expert consultations, and pilot testing of prototype devices. Statistical models were used to assess device performance and user acceptance. The novel diagnostic devices demonstrated an 85% accuracy rate in detecting common infectious diseases, with a confidence interval for the proportion indicating reliable performance across diverse settings. This study validates the potential of biomedical engineering innovations to significantly improve diagnostic outcomes in resource-limited healthcare environments. Immediate deployment and further validation are recommended before widespread implementation. Continuous user feedback will be crucial for device refinement. Diagnostic Devices, Resource-Limited Settings, Biomedical Engineering, Mozambique The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic Terms: African, Sub-Saharan*

Methodological Terms: Qualitative Research, Quantitative Research

Theoretical Terms: Cultural Sensitivity, Ethnography

Relevant Engineering Terms: Microfluidics, Point-of-Care Diagnostics

Conceptual Frameworks: Health Informatics, Health Systems Strengthening

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