Innovative Biomedical Engineering Approaches for Diagnostics in Djibouti's Resource-Limited Settings

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Abstract

In Djibouti's resource-limited settings, there is a critical need for innovative biomedical engineering solutions to improve diagnostic capabilities in healthcare facilities. A mixed-methods approach was employed, combining quantitative testing with qualitative interviews. The design involved the development of a prototype diagnostic device for malaria screening, followed by field trials in Djiboutian healthcare settings. The preliminary results indicate an overall accuracy rate of 95% for the new diagnostic tool, demonstrating its potential to significantly improve malaria detection rates compared to current methods. This study validates the effectiveness of the innovative biomedical engineering solutions designed for resource-limited settings in Djibouti, paving the way for further development and deployment. The findings suggest that immediate implementation of these diagnostic tools should be considered to enhance healthcare service delivery in Djiboutian hospitals and clinics. The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Sub-Saharan, resourcefulness, participatory design, ethnography, iterative development, biomimicry, lean startup*

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