



Teleconsultation System Development for Malaria Diagnosis in Remote South Sudan: Acceptability and Accuracy Enhancement

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Abstract

Malaria remains a significant health challenge in remote areas of South Sudan, where access to diagnostic facilities is limited. The study employed user acceptability measures and conducted diagnostic accuracy assessments using a mixed-method approach combining qualitative interviews and quantitative surveys. A preliminary survey indicated an acceptance rate of 85% from potential users, with a mean age of 42 years. Diagnostic accuracy was evaluated against traditional methods, showing a sensitivity of 90%, with confidence intervals indicating robust reliability. The teleconsultation system demonstrated high user acceptability and promising diagnostic accuracy in South Sudan’s remote settings. Further piloting is recommended to refine the system before broader implementation. Malaria, Teleconsultation System, User Acceptability, Diagnostic Accuracy, Remote Health 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: *Malaria, Remote Areas, Teleconsultation, Diagnostic Accuracy, Geographic Information Systems, Community Acceptance, Decision Support Systems*

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