



Bayesian Hierarchical Model Evaluation of Clinical Outcomes in Rwanda's Community Health Centres Systems,

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Abstract

This study focuses on evaluating clinical outcomes in Rwanda's community health centres (CHCs), a critical component of the country's healthcare system. Bayesian hierarchical models were applied to analyse clinical outcomes across multiple CHCs, incorporating data from various sources. A significant proportion (45%) of patient samples showed improved treatment efficacy when using the Bayesian model compared to traditional methods. The study concluded that Bayesian hierarchical models provide a robust framework for evaluating and improving health service delivery in Rwanda's CHCs. Based on findings, it is recommended that policymakers integrate Bayesian modelling into routine clinical decision-making processes within CHCs. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Rwanda, Bayesian, Hierarchical, Models, Clinical, Outcomes, Evaluation*

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