Bayesian Hierarchical Model for Evaluating Clinical Outcomes in Rural Clinics Systems of Ghana,

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Abstract

This study aims to evaluate the clinical outcomes of rural health clinics in Ghana using a Bayesian hierarchical model. A Bayesian hierarchical model will be utilised to analyse data from multiple rural health centers in Ghana. This approach allows for the incorporation of clinic-specific covariates into a global analysis framework, enhancing the precision of outcome estimations. The preliminary results indicate that there is a significant variation in clinical outcomes among different clinics, with some having higher success rates due to better resource allocation and standardization practices. This study demonstrates the effectiveness of Bayesian hierarchical modelling in quantifying clinical performance variability within rural healthcare systems. The findings suggest that targeted interventions should be implemented to improve the performance of underperforming clinics, focusing on resources and training programmes. Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\rightarrow}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, Bayesian, Hierarchical, Model, Clinical, Outcomes, Ghana*

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