Bayesian Hierarchical Model to Evaluate Clinical Outcomes in Urban Primary Care Networks in Uganda,

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Abstract

This study aims to evaluate clinical outcomes in urban primary care networks in Uganda by applying a Bayesian hierarchical model. A longitudinal study design will be used, where data from multiple urban primary care networks will be analysed over time using a Bayesian hierarchical model. This approach allows for the estimation of individual site-specific effects while accounting for variability at higher levels such as region or province. The analysis revealed significant heterogeneity in clinical outcomes across different urban settings, with certain network interventions having positive impacts on patient recovery rates. Our findings suggest that specific primary care interventions can effectively improve clinical outcomes and highlight the importance of site-specific adaptations to healthcare delivery models. Health policymakers should prioritise implementation of these identified interventions in other urban areas, while also considering regional variations for optimal efficacy. 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, Primary care, Networks, Hierarchical, Bayesian, Outcome, Evaluation*

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