



Bayesian Hierarchical Model for Measuring Clinical Outcomes in Rural Clinics Systems in South Africa: A Methodological Evaluation

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Abstract

Clinical outcomes in rural clinics in South Africa are often poorly measured due to data limitations and variability across different settings. A Bayesian hierarchical model will be applied to assess clinical outcomes in rural clinics. The model accounts for intra-cluster correlation and heterogeneity among clinics. The model demonstrated improved accuracy in estimating mean clinical outcomes across different clinics compared to traditional methods. The proposed Bayesian hierarchical model provides a robust method for measuring clinical outcomes in rural clinics, reducing uncertainty and improving data reliability. This approach should be implemented in routine monitoring of clinical services to enhance decision-making and resource allocation. Bayesian Hierarchical Model, Clinical Outcomes, Rural Clinics, South Africa Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: South African, Bayesian, Hierarchical, Model, Evaluation, Clinical, Outcomes

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