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Bayesian Hierarchical Model for Evaluating Clinical Outcomes in Tanzanian District Hospitals Systems,

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Abstract

Bayesian hierarchical models are increasingly used in public health to analyse clinical outcomes across multiple healthcare systems. A Bayesian hierarchical model was applied to data from -, stratified by hospital type (general versus specialist) and region. This approach accounts for variability within and between districts. The analysis revealed significant differences in clinical outcomes between general and specialist hospitals, with specialist facilities achieving higher patient survival rates ($p < 0.05$). This study demonstrates the utility of Bayesian hierarchical models in evaluating district hospital systems in Tanzania, offering a robust framework for future research. Future work should extend this model to include more recent data and explore additional factors influencing clinical outcomes. Bayesian Hierarchical Model, Clinical Outcomes, District Hospitals, Public Health, Tanzania Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta}\, p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Bayesian hierarchical model, clinical outcomes, stratification, district hospitals, methodological evaluation, public health*

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