Bayesian Hierarchical Model Assessment in Ghanaian District Hospitals: An Evaluation of Clinical Outcomes Systems

Owusu Kofi[1]**, Amma Adofo**[1]

[1] Noguchi Memorial Institute for Medical Research

Author notes

Owusu Kofi is affiliated with Noguchi Memorial Institute for Medical Research and focuses on Medicine research in Africa.

Amma Adofo is affiliated with Noguchi Memorial Institute for Medical Research and focuses on Medicine research in Africa.

Abstract

Bayesian hierarchical models are increasingly used in healthcare research to analyse clinical outcomes across multiple sites or levels. A Bayesian hierarchical model was employed to assess clinical outcomes, with data collected from 10 district hospitals. Uncertainty in estimates is quantified using robust standard errors. The analysis revealed significant variability in patient recovery rates across districts, with some areas showing improvement over time. Bayesian hierarchical modelling provided a nuanced understanding of clinical performance and identified specific interventions for enhancement. District hospitals should prioritise targeted training programmes based on the findings to improve patient outcomes. Clinical Outcomes, Bayesian Hierarchical Model, Ghanaian District Hospitals Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographical, Bayesian, Hierarchical, Model, Ghana, Healthcare, Analysis*

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