Bayesian Hierarchical Model for Measuring Risk Reduction in District Hospital Systems in Kenya,

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Abstract

The healthcare landscape in Kenya's district hospitals has undergone significant challenges over recent years, necessitating a robust methodological approach to evaluate risk reduction strategies. The research employs a Bayesian hierarchical regression model to analyse data from district hospitals across Kenya, accounting for spatial variability and heterogeneity among healthcare facilities. The analysis reveals that certain risk reduction strategies are significantly effective, with an estimated 15% reduction in neonatal mortality rates attributed to improved infection control measures. This study provides empirical evidence supporting the efficacy of targeted interventions in district hospital settings, contributing to a more informed and data-driven approach for healthcare system improvement. Health policymakers should prioritise implementation of these findings through continuous monitoring and evaluation of risk reduction programmes within Kenyan district hospitals. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\cdot \cdot} p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Kenya, District Hospitals, Bayesian Hierarchical Models, Risk Analysis, Quantitative Methods, Epidemiology, Health Services Research*

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