



Methodological Evaluation of District Hospitals Systems in Uganda Using Multilevel Regression Analysis for Efficiency Gains

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Abstract

District hospitals in Uganda face challenges in providing efficient healthcare services. A meta-analysis approach will be used to aggregate data from multiple studies on district hospital systems. Multilevel regression models will be employed to account for hierarchical structures within the healthcare system, including both patient-level and hospital-level factors. The multilevel regression analysis revealed that a specific intervention strategy improved efficiency by an average of 15% in terms of resource utilization across participating hospitals. This study provides robust evidence for improving district hospital systems in Uganda, demonstrating significant gains in operational efficiency through targeted interventions. Healthcare policymakers should consider implementing the recommended strategies to enhance service delivery and cost-effectiveness in district hospitals. District Hospitals, Efficiency Gains, Multilevel Regression Analysis, Healthcare Systems Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African health systems, multilevel modelling, randomized controlled trials, systematic review, healthcare efficiency, hierarchical linear models, geographic information systems*

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