



Risk Reduction in Uganda's District Hospitals Systems via Multilevel Regression Analysis: A Methodological Evaluation

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Abstract

Ugandan district hospitals face significant operational challenges that affect service delivery and patient outcomes. A multilevel regression model was employed to analyse data collected from a sample of 50 Ugandan district hospitals. The model accounts for both individual-level (hospital-specific) and contextual-level (district-wide) factors influencing risk reduction efforts. The multilevel analysis revealed that implementing quality improvement initiatives at the hospital level significantly reduced patient readmission rates by approximately 12%, with robust standard errors indicating the reliability of this finding. Multilevel regression analysis provided a nuanced understanding of district hospitals' risk reduction strategies, highlighting the importance of both individual and contextual interventions for improving healthcare quality in Uganda. District health authorities should prioritise the replication of successful quality improvement initiatives across all hospitals to achieve broader coverage and impact. district hospitals, multilevel regression analysis, risk reduction, patient readmission rates Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, district hospitals, multilevel modelling, hierarchical analysis, health policy, regression analysis, geographic information systems*

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