



Multilevel Regression Analysis for Measuring Clinical Outcomes in District Hospitals Systems of Kenya: An Evaluation Study

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Abstract

This study focuses on evaluating the clinical outcomes in district hospitals of Kenya's health system. A multilevel regression model was employed to analyse data from district hospitals across Kenya. The model accounts for the hierarchical structure of the data, with hospital-level and patient-level variables considered simultaneously. The analysis revealed significant variation in clinical outcomes between different districts, with a notable proportion (25%) of variance explained by district-level factors such as infrastructure quality and healthcare provider training levels. The multilevel regression model demonstrated improved accuracy in predicting clinical outcomes compared to single-level models, highlighting the importance of considering contextual factors at both hospital and patient levels. Health policymakers should prioritise interventions addressing district-specific challenges to enhance overall system performance and improve patient care quality. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Kenya, District Hospitals, Multilevel Regression, Hierarchical Analysis, Outcome Measures, Public Health, Methodology*

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