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# Multilevel Regression Analysis to Evaluate Clinical Outcomes in District Hospitals of Kenya: A Methodological Assessment

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## Abstract

District hospitals in Kenya play a crucial role in healthcare delivery but often face challenges in providing consistent clinical outcomes. A multilevel logistic regression model was employed to analyse data from district hospitals across Kenya. The model incorporates both hospital-level and patient-level variables to measure clinical success rates with robust standard errors added for uncertainty. The multilevel analysis revealed that the presence of a dedicated medical director significantly improved clinical outcomes by 20% (OR: 1.2, CI: 1.05-1.35). This study provides evidence to support the implementation of dedicated medical directors in district hospitals to enhance clinical success rates. District health authorities should prioritise recruiting and retaining a dedicated medical director to improve patient care outcomes. district hospitals, Kenya, multilevel regression, clinical outcomes, logistic model Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

**Keywords:** *Kenya, District Hospitals, Multilevel Regression, Hierarchical Analysis, Methodology, Outcomes Evaluation, Logistic Regression*

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This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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