Journal of Health Policy and Health Governance in Africa

Methodological Evaluation of District Hospitals Systems in Kenya Using Multilevel Regression Analysis for Yield Improvement Assessment

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Published: 19 March 2009 | **Received:** 29 October 2008 | **Accepted:** 25 February 2009

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DOI: 10.5281/zenodo.18882705

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Abstract

District hospitals in Kenya play a crucial role in healthcare delivery, yet their operational efficiency remains suboptimal. This study employs a multilevel regression analysis framework, incorporating data from multiple sources including published studies on healthcare performance metrics. The model aims to quantify the impact of various factors such as staff training programmes and financial allocations on yield improvement across different district hospitals in Kenya. The findings indicate that while multilevel regression models effectively capture the complex interplay between hospital systems and external variables, there is a need for more longitudinal data to validate long-term yield improvements. This study contributes by providing a robust methodological framework for evaluating district hospitals' operational efficiency, which can guide policymakers in designing effective interventions aimed at improving healthcare delivery. Policymakers should consider the use of multilevel regression models to assess yield improvement and prioritise longitudinal data collection to ensure accurate evaluation of intervention impacts. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, district hospitals, multilevel analysis, regression modelling, yield assessment, healthcare efficacy, system evaluation*

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