



Methodological Evaluation of District Hospital Systems in Kenya: Multilevel Regression Analysis for System Reliability Measures

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Abstract

The healthcare landscape in Kenya's district hospitals is characterized by varying levels of infrastructure, personnel training, and service delivery. A comprehensive search strategy was employed using multiple databases including PubMed, Cochrane Library, and African Journal Online. Studies published between and were included if they addressed district hospitals' system reliability from a methodological standpoint. The analysis revealed that multilevel regression models provided robust estimates of system reliability with coefficients indicating significant differences in service availability across regions ($p < 0.05$). Multilevel regression analysis offers a reliable tool for assessing district hospital systems' reliability, facilitating targeted interventions to improve healthcare delivery. Future studies should validate these findings through longitudinal data collection and explore the impact of specific factors on system performance. District Hospitals, System Reliability, Multilevel Regression Analysis, Methodological Evaluation, Healthcare Delivery Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Hospital, Systems, SocialCare, Multilevel, Reliability*

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