



Reliability Assessment of District Hospitals Systems in Kenya Using Multilevel Regression Analysis: An Exploratory Study

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Abstract

District hospitals in Kenya play a crucial role in healthcare delivery, yet their reliability remains an area of concern. Understanding system reliability is essential for improving service quality and resource allocation. We employed a multilevel regression model to analyse data from district hospitals in Kenya, considering both individual (patient) and organisational (hospital) levels. Data was collected through surveys and administrative records. Our analysis revealed that the proportion of patients who received timely treatment varied significantly between different districts, with some areas showing a delay rate exceeding 20%. This study highlights the need for targeted interventions to enhance system reliability in district hospitals. Further research is required to understand and address systemic issues effectively. District health authorities should prioritise training programmes for healthcare providers and implement robust quality assurance measures to improve treatment timeliness. district hospital systems, reliability assessment, multilevel regression analysis, Kenya Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, District Hospitals, Multilevel Regression, Healthcare Delivery, Methodological Evaluation, System Reliability, Community Health Systems Reform

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