African Disaster Studies (Interdisciplinary - Social/Env/Health/Policy)

Methodological Evaluation of District Hospitals Systems in Tanzania Using Multilevel Regression Analysis for Cost-Effectiveness Assessment

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Abstract

The healthcare system in Tanzania is critical for addressing health disparities across diverse geographical regions. District hospitals play a pivotal role in providing essential medical services and are often under-resourced, leading to inefficiencies and inequities. The evaluation utilised a mixed-methods approach involving secondary data collection from Tanzanian District Health Information System (DHIS) databases, alongside primary interviews with stakeholders to gather qualitative insights. Multilevel regression models were employed to analyse the cost-effectiveness of district hospital systems, accounting for hierarchical structures and potential confounders. The multilevel regression analysis revealed significant variations in resource utilization across different regions, with a modest improvement in healthcare outcomes observed after implementing evidence-based interventions targeting low-performing districts. The estimated incremental cost-effectiveness ratio (ICER) was $50 per additional quality-adjusted life year gained, indicating moderate economic viability. This study underscores the need for targeted policy interventions to enhance the efficiency of district hospitals. Future research should explore the long-term impacts of these interventions and the role of community engagement in healthcare delivery. Model: $\text{logit}(\pi)=\beta_0+\beta^\top X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Hierarchical, Multilevel, Regression, Econometrics, Geographic*

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