



Methodological Evaluation of Community Health Centre Systems in Tanzania Using Multilevel Regression Analysis to Measure Efficiency Gains

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Abstract

Community health centre (CHC) systems in Tanzania face challenges in resource allocation and service delivery efficiency. A multilevel regression model was applied to assess the impact of various factors on CHC performance at both individual (case-level) and aggregate (system-level). Multilevel regression revealed that case volume had a significant positive effect on service delivery efficiency, with an estimated increase in efficiency by 5% for every additional 100 cases per month. The study provides evidence of the importance of case-volume as a determinant of CHC system efficiency and offers insights into optimising resource allocation strategies. Policy recommendations include focusing on increasing case volume to enhance service delivery effectiveness, alongside ongoing system monitoring and review. Community Health Centres, Multilevel Regression Analysis, Efficiency Gains, Service Delivery Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Tanzania, Community Health Centres, Multilevel Regression, Hierarchical Analysis, Outcome Measures, Resource Allocation, Service Delivery, Efficiency Gains

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