



Multilevel Regression Analysis to Evaluate Clinical Outcomes within Nigerian Community Health Centre Systems

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Abstract

Community health centers in Nigeria face challenges in providing consistent clinical outcomes due to varying system efficiencies. We employed multilevel regression models with robust standard errors to analyse data from multiple levels (individual patients and health centers) collected over two years. The model included fixed effects for individual patient characteristics and random effects for health centre-level variations. The analysis revealed that a significant proportion of clinical outcomes, particularly in patient satisfaction ratings, improved when contextual factors such as health centre infrastructure were addressed. Multilevel regression models provide valuable insights into the effectiveness of community health centre systems and can guide policy improvements to enhance service delivery quality. Health centers should prioritise investments in infrastructure and staff training to achieve better clinical outcomes, supported by ongoing performance monitoring. Community Health Centers, Clinical Outcomes, Multilevel Regression Analysis, Nigeria 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, Ghanaian, HealthInequality, RandomEffectsRegression

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