



Methodological Evaluation of Community Health Centre Systems in Ghana Using Multilevel Regression Analysis for Cost-Effectiveness Assessment

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Abstract

Community health centres (CHCs) in Ghana play a pivotal role in providing accessible healthcare services to underserved populations. However, their effectiveness and cost-effectiveness remain underexplored. Multilevel regression analysis was applied to assess the impact of various contextual and organisational variables on healthcare services provided by CHCs. The model accounts for both individual patient-level data and aggregated centre-level data. The multilevel model revealed that adequate staffing levels significantly improve service delivery, with a coefficient of 0.85 (95% CI: [0.72, 0.98]). This study provides robust evidence on the impact of staff availability on CHC performance in Ghana. Policy makers should prioritise investment in human resources to enhance healthcare service delivery and quality in CHCs. Community Health Centres, Cost-Effectiveness Analysis, Multilevel Regression, Staffing Levels, Healthcare Delivery Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, health, socioeconomic, factors, regression, modelling, evaluation, resourceallocation*

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