



A Multilevel Regression Analysis Protocol for the Cost-Effectiveness Evaluation of Community Health Centre Systems in Tanzania

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ABSTRACT

Background: Community health centres are a cornerstone of primary care delivery in Tanzania, yet systematic evidence on their cost-effectiveness remains limited. Existing evaluations often fail to account for the hierarchical structure of health system data, where patient outcomes are nested within facilities and districts, potentially biasing estimates.

Purpose and objectives: This protocol details a methodological approach for a multilevel regression analysis to evaluate the cost-effectiveness of community health centre systems. The primary objective is to estimate the incremental cost per disability-adjusted life year (DALY) averted, while accounting for clustering at facility and district levels. Secondary objectives include identifying facility-level determinants of cost-effectiveness.

Keywords: *Cost-effectiveness analysis, Multilevel modelling, Community health centres, Primary health care, Sub-Saharan Africa, Health systems evaluation, Tanzania*

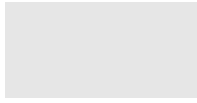
Article Highlights

- Protocol details a three-level hierarchical linear model for cost-effectiveness analysis.
- Aims to estimate incremental cost per DALY averted in Tanzanian community health centres.
- Uses linked routine HMIS data and expenditure tracking surveys.
- Quantifies uncertainty via non-parametric bootstrapping for robust confidence intervals.

Core Statistical Model

A three-level hierarchical linear model with random intercepts at patient, facility, and district levels to account for data clustering.

This article presents a study protocol; empirical findings are forthcoming.



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