

A Methodological Review and Multilevel Regression Analysis of Cost-Effectiveness in Ghanaian Community Health Centre Systems

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ABSTRACT

Background: Community health centres are a cornerstone of primary healthcare delivery in Ghana, yet systematic methodological appraisals of their cost-effectiveness remain scarce. Existing evaluations often lack the analytical rigour to account for the hierarchical structure of health system data, potentially leading to biased estimates.

Purpose and objectives: This review aims to critically evaluate methodological approaches used in assessing the cost-effectiveness of Ghanaian community health centres and to demonstrate the application of a multilevel regression framework for generating more accurate, policy-relevant estimates.

Keywords: *Cost-effectiveness analysis, Community health centres, Sub-Saharan Africa, Multilevel modelling, Primary healthcare, Ghana*

Article Highlights

- Identifies reliance on simple cost-per-output ratios that fail to control for confounding or data hierarchy.
- Proposes a three-level random intercepts model to account for individual, facility, and district effects.
- Illustrative analysis shows a 10% expenditure increase linked to a 3.2% rise in service coverage.
- Advocates for standardised, hierarchical data collection to enable robust economic evaluation.

Analytical Framework

The study employs a three-level random intercepts model to analyse cost-effectiveness, clustering robust standard errors at the district level to account for health system hierarchy.

This review critiques methodological approaches and demonstrates an advanced analytical framework for health systems research.

ABSTRACT-ONLY PUBLICATION

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