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Methodological Evaluation and Cost-Effectiveness of Community Health Centres in Uganda

A Multilevel Regression Analysis

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ABSTRACT

Background: Community health centres are a cornerstone of primary healthcare delivery in many African nations, yet robust methodological frameworks for evaluating their cost-effectiveness are lacking. Existing analyses often fail to account for the hierarchical structure of health system data, potentially leading to biased estimates.

Purpose and objectives: This review critically evaluates methodological approaches for assessing the cost-effectiveness of community health centres, with a focus on the application of multilevel regression modelling. It aims to synthesise best practices and identify key determinants of efficiency within the Ugandan context.

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

Article Highlights

- Integrated maternal/child health programmes show 15-25% better cost-effectiveness.
- Multilevel modelling captures unobserved heterogeneity in health system data.
- Two-level random intercept models address nested facility and district effects.
- Methodological rigour is essential for valid economic evaluation in primary care.

Core Statistical Model

The review evaluates a two-level random intercept model: $y_{ij} = \beta_0 + \beta X_{ij} + u_j + e_{ij}$, where u_j represents district-level random effects, accounting for hierarchical data structure.

This methodological review synthesises best practices for economic evaluation in decentralised primary healthcare.