

Methodological Evaluation of Rural Clinical Systems in Kenya

A Multilevel Regression Analysis of Clinical Outcomes

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ABSTRACT

Background: Rural clinical systems in sub-Saharan Africa face significant operational challenges, yet robust methodological frameworks for evaluating their performance and impact on patient outcomes are lacking. Existing evaluations often fail to account for the hierarchical structure of health data, potentially leading to biased inferences.

Purpose and objectives: This study aimed to develop and apply a multilevel modelling framework to evaluate the performance of rural clinics, with the objective of quantifying the influence of clinic-level systemic factors on a key clinical outcome, specifically the rate of successful antenatal care completion.

Keywords: *sub-Saharan Africa, rural health systems, multilevel modelling, health services research, clinical outcomes, Kenya, health systems evaluation*

Article Highlights

- Integrated pharmacy and lab services increased odds of successful outcomes by 85%.
- Multilevel modelling revealed clinic-level factors explain 22% of outcome variance.
- Methodology demonstrates need to account for hierarchical health data structure.
- Findings support policy shift toward integrated service delivery models.

Methodological Contribution

This study provides a novel application of multilevel regression to quantify the specific influence of clinic-level system characteristics on clinical outcomes in a rural African context.

This analysis demonstrates the critical importance of methodological choice in health systems evaluation.

ABSTRACT-ONLY PUBLICATION

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