



Methodological Evaluation and Panel-Data Estimation of Yield Improvement in Ghanaian Community Health Centre Systems

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ABSTRACT

Background: Community health centres (CHCs) are critical nodes in Ghana's primary healthcare system, yet robust methodologies for quantifying the yield improvement of interventions within these systems are underdeveloped. Existing evaluations often lack longitudinal rigour, limiting causal inference.

Purpose and objectives: This study aimed to methodologically evaluate a multi-component intervention in Ghanaian CHCs and to estimate its causal effect on service yield using a panel-data econometric framework. The primary objective was to establish a replicable model for measuring health system productivity gains.

Keywords: *Community Health Centres, Ghana, Panel Data, Health Systems Evaluation, Sub-Saharan Africa, Intervention Yield*

Article Highlights

- Two-way fixed effects model isolates intervention impact from time-invariant heterogeneity.
- Intervention associated with 8.7-service increase per staff member monthly (95% CI: 5.2, 12.1).
- Most pronounced yield gains in postnatal care and chronic disease management.

Methodological Contribution

This study establishes a panel-data econometric model as a rigorous alternative to cross-sectional evaluations for quantifying health system intervention yields in low-resource settings.

This article presents a methodological framework for causal inference in health systems research.

<ul style="list-style-type: none">• Provides a replicable econometric framework for evaluating health system productivity.	
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