

# Longitudinal Evaluation of Clinical Outcomes in Rwandan District Hospitals

*A Quasi-Experimental Methodological Assessment*

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## ABSTRACT

**Background:** Evaluating health system interventions in low-resource settings requires robust, context-appropriate methodologies. Quasi-experimental designs are increasingly employed but their application for longitudinal clinical outcome assessment in district hospital systems remains methodologically underexplored.

**Purpose and objectives:** This study aimed to methodologically assess the application of a quasi-experimental, difference-in-differences design for measuring longitudinal clinical outcomes within a national district hospital strengthening programme.

**Keywords:** *Quasi-experimental design, Health systems research, Clinical outcomes, Sub-Saharan Africa, Longitudinal study, District hospitals, Low-resource settings*

### Article Highlights

- Quasi-experimental design successfully isolated programme effects from temporal trends.
- Applied model showed an 18.2% reduction in facility-based maternal mortality.
- Methodology demonstrates viability for longitudinal evaluation in operational settings.
- Highlights importance of robust routine data systems for health systems research.

### Core Analytical Model

Difference-in-differences:  $Y_{it} = \beta_0 + \beta_1 \text{Treat}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Treat}_i \times \text{Post}_t) + \varepsilon_{it}$ , with inference based on cluster-robust standard errors.

*This study assesses the methodological application of quasi-experimental design, not just its clinical findings.*

## ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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