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A Quasi-Experimental Evaluation of Efficiency Gains in Kenyan District Hospital Systems

A Methodological Appraisal

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ABSTRACT

Background: District hospital systems in sub-Saharan Africa face persistent challenges in resource allocation and operational efficiency. Robust methodological frameworks for quantifying efficiency gains from systemic interventions are lacking, particularly within complex, real-world healthcare settings.

Purpose and objectives: This study aimed to appraise a quasi-experimental design for measuring operational efficiency gains following a systemic intervention in district-level hospitals. The primary objective was to evaluate the methodological rigour and feasibility of this approach in a resource-constrained context.

Keywords: *District hospitals, Sub-Saharan Africa, Quasi-experimental design, Operational efficiency, Health systems research, Resource allocation, Kenya*

Article Highlights

- Difference-in-differences design isolated a significant 18% reduction in patient processing time.
- Methodological appraisal reveals feasibility in resource-constrained, real-world hospital settings.
- Successfully disentangled intervention effects from underlying secular trends.
- Highlights critical need for robust routine data systems to support high-fidelity evaluation.

Core Analytical Model

The study employed a difference-in-differences design: $Y_{it} = \beta0 + \beta1(Treat_i \times Post_t) + \gamma_i + \delta_t + \varepsilon_{it}$, with inference based on cluster-robust standard errors.

This appraisal advances methodological discourse on evaluating complex health system interventions.