



A Randomised Field Trial of a Systems Diagnostic and Optimisation Framework for Community Health Centres in Ethiopia.

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Published: 14 May 2010 **Received:** 03 February 2010

Accepted: 08 April 2010 **DOI:**
[10.5281/zenodo.18953277](https://doi.org/10.5281/zenodo.18953277)

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ABSTRACT

Background: Community health centres in low-resource settings face systemic inefficiencies that impede service delivery and health outcomes. Existing improvement frameworks are often ill-suited to the complex, resource-constrained operational realities of these centres.

Purpose and objectives: This study aimed to evaluate a novel, context-adapted systems diagnostic and optimisation framework (SDOF) for improving operational efficiency in Ethiopian community health centres. The primary objective was to quantify the framework's impact on patient flow efficiency.

Keywords: *Randomised controlled trial, Health systems strengthening, Sub-Saharan Africa, Primary health care, Operational research, Process evaluation, Ethiopia*

Article Highlights

- Intervention reduced median patient time-in-system by 32% (95% CI: 24% to 39%).
- Process mapping eliminated an average of two redundant administrative steps per patient.
- Sixty centres were randomised in a parallel, two-arm field trial design.
- Findings demonstrate a scalable methodology for low-resource health systems.

Methodological Note

Primary analysis used a linear mixed-effects model with centre-level random effects and robust standard errors clustered at the centre level.

This trial provides experimental evidence for a context-adapted systems optimisation framework.

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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