



# Methodological Evaluation of Community Health Centre Systems in Ethiopia Using Difference-in-Differences Approach to Assess Reliability

Fasil Desta<sup>1,2</sup>, Mekdes Abeba<sup>2,3</sup>, Seresignew Asfaw<sup>4</sup>

<sup>1</sup> Department of Epidemiology, Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa

<sup>2</sup> Department of Surgery, Gondar University

<sup>3</sup> Department of Surgery, Haramaya University

<sup>4</sup> Gondar University

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**Correspondence:** [fdesta@hotmail.com](mailto:fdesta@hotmail.com)

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## Author notes

*Fasil Desta is affiliated with Department of Epidemiology, Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa and focuses on Medicine research in Africa.*

*Mekdes Abeba is affiliated with Department of Surgery, Haramaya University and focuses on Medicine research in Africa.*

*Seresignew Asfaw is affiliated with Gondar University and focuses on Medicine research in Africa.*

## Abstract

Community health centers (CHCs) in Ethiopia play a crucial role in providing primary healthcare services to rural and underserved populations. The reliability of these systems is essential for ensuring effective service delivery, but there is limited evidence on how CHC systems can be reliably evaluated. A Difference-in-Differences model was employed to analyse pre- and post-intervention data from CHCs across different regions in Ethiopia. Data on patient flow, resource allocation, and staff performance were collected using a standardised questionnaire. Robust standard errors were used to account for potential heterogeneity. The analysis revealed significant improvements in patient wait times and resource utilization post-intervention, with a reduction of approximately 20% in average waiting periods (*mean = 35 minutes*). The DiD model demonstrated high reliability and validity in measuring system changes over time. The findings suggest that CHCs can be effectively monitored for service improvements. Future research should consider longitudinal data collection to further validate the DiD methodology's applicability and reliability across different settings. community health centers, Ethiopia, Difference-in-Differences, healthcare systems evaluation, robust standard errors

**Keywords:** Ethiopia, Geographic Medicine, Community Health Centers, Difference-in-Differences, Randomized Controlled Trials, Outcome Evaluation, Public Health Systems

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