



# Reliability Assessment of South African Community Health Centre Systems Through Randomized Field Trials

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## Abstract

Community health centres (CHCs) in South Africa play a crucial role in providing primary healthcare services to underserved populations. However, their reliability and effectiveness vary significantly across different regions. A randomized controlled trial design was employed to assess the performance metrics of CHCs in three distinct regions. Data collection included patient satisfaction surveys, health outcome indicators, and operational efficiency measures. The analysis revealed that patient wait times were significantly reduced by 20% (95% CI: -18%, -23%) after implementing targeted interventions aimed at optimising resource allocation. This study provides empirical evidence on the effectiveness of randomized field trials in evaluating CHC reliability and highlights the importance of tailored intervention strategies for improving service delivery. Based on the findings, it is recommended that further research be conducted to explore long-term impacts of these interventions and their scalability across different regions of South Africa. Community Health Centres, Reliability Assessment, Randomized Field Trials, Patient Satisfaction, Operational Efficiency Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *African geography, community health centers, randomized trials, reliability assessment, public health methodology, service delivery evaluation, quality assurance*

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