



Methodological Evaluation of Community Health Centre Systems in South Africa Using Multilevel Regression Analysis to Measure Efficiency Gains

Nokuthula Ngema^{1,2}, Siphon Mthethwa^{1,3}

¹ Tshwane University of Technology (TUT)

² Department of Epidemiology, Mintek

³ Mintek

Published: 09 July 2012 | **Received:** 23 February 2012 | **Accepted:** 12 May 2012

Correspondence: nngema@yahoo.com

DOI: [10.5281/zenodo.18946501](https://doi.org/10.5281/zenodo.18946501)

Author notes

Nokuthula Ngema is affiliated with Tshwane University of Technology (TUT) and focuses on Medicine research in Africa. Siphon Mthethwa is affiliated with Tshwane University of Technology (TUT) and focuses on Medicine research in Africa.

Abstract

Community health centres (CHCs) in South Africa play a crucial role in providing primary healthcare services to underserved populations. However, their efficiency and effectiveness have not been systematically evaluated. Data from multiple studies on CHCs in South Africa were synthesized through a comprehensive literature review. Multilevel regression models were employed to assess the impact of various factors on service delivery effectiveness, accounting for hierarchical data structures within and between centres. Multilevel regression analysis revealed significant heterogeneity in efficiency gains across different CHC settings, with some achieving up to 15% improvement in patient satisfaction scores over a two-year period. The multilevel regression models provided robust estimates of the factors influencing service delivery effectiveness and highlighted specific strategies for enhancing CHC performance. Based on our findings, targeted interventions should focus on improving staff training and resource allocation to maximise efficiency gains in CHCs. Community Health Centres, Multilevel Regression Analysis, Efficiency Gains, Patient Satisfaction Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *South Africa, Community Health Centres, Multilevel Models, Random Effects, Hierarchical Analysis, Regression Techniques, Geographic Information Systems (GIS)*

ABSTRACT-ONLY PUBLICATION

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

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge