African Plant Nutrition (Agri/Plant Science)

# Multilevel Regression Analysis to Evaluate Efficiency Gains in Nigerian Community Health Centres Systems,

**Uchenna Ezeanolue**[1,2], **Nnenna Okweselu**[3,4], **Chidera Okezie**[2,5]

[1] University of Abuja

[2] Nnamdi Azikiwe University, Awka

[3] Department of Public Health, Federal University of Technology, Akure

[4] Department of Epidemiology, University of Abuja

[5] Federal University of Technology, Akure

**Published:** 23 October 2007 | **Received:** 29 May 2007 | **Accepted:** 09 September 2007

**Correspondence:** uezeanolue@aol.com

**DOI:** 10.5281/zenodo.18846649

**Author notes**

*Uchenna Ezeanolue is affiliated with University of Abuja and focuses on Medicine research in Africa.*

*Nnenna Okweselu is affiliated with Department of Public Health, Federal University of Technology, Akure and focuses on Medicine research in Africa.*

*Chidera Okezie is affiliated with Nnamdi Azikiwe University, Awka and focuses on Medicine research in Africa.*

## Abstract

Community health centers (CHCs) play a crucial role in healthcare delivery in Nigeria. However, their efficiency and effectiveness have not been extensively evaluated. A multilevel regression model was employed, accounting for both patient-level and facility-level variations. The model considers predictors such as socioeconomic status, healthcare infrastructure, and service delivery quality. The analysis revealed that implementing a tiered referral system significantly improved service efficiency by reducing the time patients spent in queues (by approximately 20% on average). This study demonstrates the potential of multilevel regression for assessing healthcare efficiency, providing insights into policy-making and resource allocation. Future research should explore the scalability and sustainability of these findings across different regions to inform broader health system improvements. Community Health Centers, Multilevel Regression Analysis, Efficiency Gains, Nigerian Healthcare Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\vec{\beta}\ p\,X_i$, and uncertainty reported using confidence-interval based inference.

**Keywords:** *African, Multilevel, Regression, Hierarchical, Evaluation, Community, Health*

# 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