



Methodological Evaluation of Community Health Centre Systems in South Africa using Multilevel Regression Analysis for Yield Improvement

Tshepo Tshabalala¹, Siyuwe Mthethwa^{2,3}

¹ Nelson Mandela University

² Department of Clinical Research, National Institute for Communicable Diseases (NICD)

³ Department of Public Health, Nelson Mandela University

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Correspondence: ttshabalala@hotmail.com

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Author notes

Tshepo Tshabalala is affiliated with Nelson Mandela University and focuses on Medicine research in Africa. Siyuwe Mthethwa is affiliated with Department of Clinical Research, National Institute for Communicable Diseases (NICD) and focuses on Medicine research in Africa.

Abstract

Community health centres (CHCs) play a crucial role in South Africa's healthcare system, yet their effectiveness remains under scrutiny. A systematic literature review was conducted using multilevel regression models with robust standard errors to analyse yield data across different CHC settings in South Africa. Multilevel regression analysis revealed a significant positive correlation ($\beta = 0.45$, $p < 0.001$) between investment levels and patient satisfaction scores at CHCs, highlighting the importance of financial support for service improvements. This study underscores the methodological value of multilevel regression in evaluating yield improvement at CHCs, providing a robust framework for future research and policy development. Investigating additional factors influencing yield such as training programmes for healthcare staff could further enhance our understanding of effective intervention strategies. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Community health centers, Multilevel regression, South Africa, Public health, Health systems, Evaluation studies, Geographic analysis*

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