



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

Nthatsi Mkhize¹

¹ Council for Scientific and Industrial Research (CSIR)

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Correspondence: nmkhize@yahoo.com

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Author notes

Nthatsi Mkhize is affiliated with Council for Scientific and Industrial Research (CSIR) and focuses on Medicine research in Africa.

Abstract

Community health centres in South Africa play a crucial role in providing healthcare services to underserved populations. Despite their importance, there is limited empirical evidence on how efficiently these systems operate. This study employed a comprehensive search strategy across multiple databases, including PubMed and Embase. Papers were selected based on predefined inclusion criteria focusing on South African context and using multilevel regression models to measure efficiency. The review identified several methodological challenges in previous studies, such as inconsistent data collection protocols and varying definitions of efficiency metrics. A specific finding was the significant proportion (35%) of health centres showing improvement when applying multilevel regression analysis for efficiency measurement. Multilevel regression analysis offers a robust framework to measure efficiency gains in community health centre systems, but there is a need for standardisation and harmonization of data collection methods across studies. Future research should focus on establishing standardised protocols for data collection and validation, as well as promoting the use of multilevel regression models to enhance consistency and comparability of efficiency measurements. 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: *Sub-Saharan, multilevel, regression, efficiency, community, health, centres, evaluation*

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