



Methodological Evaluation of Community Health Centres Systems in Rwanda via Multilevel Regression Analysis

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Abstract

Community health centres in Rwanda play a critical role in primary healthcare delivery but face challenges related to resource allocation and service quality. A systematic literature review was conducted using databases such as PubMed and Scopus. Studies were screened based on predefined inclusion criteria including peer-reviewed articles published in English between and . Findings from multilevel regression analysis indicate that community health centre performance is significantly influenced by the interaction of local socioeconomic factors (e.g., education levels, poverty rate) with healthcare system inputs such as staffing and equipment availability. Specifically, a positive coefficient in the model suggests an increase in yield when these factors are optimally balanced. Multilevel regression analysis offers a robust framework for understanding complex systems like community health centres by accounting for both individual-level variables (e.g., patient adherence) and contextual influences (e.g., government funding). Future studies should consider integrating multilevel regression models to provide more nuanced insights into the yield of community health centre systems in Rwanda. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African health systems, multilevel analysis, community-based healthcare, resource allocation, service delivery, geographical variability, statistical methods*

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