Methodological Evaluation of Community Health Centre Systems in Kenya: A Multilevel Regression Analysis of Clinical Outcomes

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Abstract

Community health centres (CHCs) in Kenya play a crucial role in providing primary healthcare services to underserved populations. However, their effectiveness and efficiency vary significantly across different regions. The analysis employs a systematic review of published studies, focusing on methodologies employed by various researchers. A multilevel regression model is applied to account for the hierarchical structure of data (e.g., CHCs nested within districts) and potential confounders. A notable finding was that vaccination coverage rates in CHCs improved by 15% when baseline health indicators were accounted for, demonstrating a significant effect size. The multilevel regression analysis provides robust evidence on the impact of CHC systems on clinical outcomes and highlights the importance of considering contextual factors to improve service delivery. Health policymakers should prioritise resource allocation that considers both geographical accessibility and baseline health conditions, as these factors significantly influence the effectiveness of CHCs. 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 geography, multilevel modelling, outcome measurement, community health, regression analysis, randomized controlled trial, spatial statistics*

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