Methodological Evaluation of Rural Clinics Systems in Ethiopia Using Multilevel Regression Analysis for Clinical Outcomes Assessment

Tadesse Mekuria[1,2]**, Fikadu Birgenäs**[3,4]**, Miftah Addisäs**[5]**, Yared Asfawadissa**[6]

[1] Department of Pediatrics, Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa

[2] Bahir Dar University

[3] Debre Markos University

[4] Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa

[5] Hawassa University

[6] Department of Public Health, Debre Markos University

Author notes

Tadesse Mekuria is affiliated with Department of Pediatrics, Africa Centers for Disease Control and Prevention (Africa CDC), Addis Ababa and focuses on Medicine research in Africa.
Fikadu Birgenäs is affiliated with Debre Markos University and focuses on Medicine research in Africa.
Miftah Addisäs is affiliated with Hawassa University and focuses on Medicine research in Africa.
Yared Asfawadissa is affiliated with Department of Public Health, Debre Markos University and focuses on Medicine research in Africa.

Abstract

Rural clinics in Ethiopia are critical for providing essential healthcare services to underserved communities. However, their performance and impact vary significantly across different regions and settings. Multilevel regression models were employed to analyse data collected from rural clinics across Ethiopia. The model accounts for both clinic-level (e.g., staffing levels, equipment availability) and district-level (e.g., socioeconomic factors, community engagement) influences on clinical outcomes. The multilevel regression analysis revealed that patient recovery rates in clinics with higher staff-to-patient ratios were significantly improved by approximately 15%, indicating a positive impact of adequate staffing levels on clinical performance. This study provides robust evidence supporting the importance of resource allocation and staff management in improving healthcare delivery within rural clinics in Ethiopia. Based on the findings, policy recommendations include enhancing training programmes for clinic personnel and implementing strategies to increase patient access to preventive health check-ups. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta}_p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ethiopia, Multilevel Modelling, Rural Health Services, Clinical Outcomes, Quality Assessment, Regression Analysis, Geographic Variation*

ABSTRACT-ONLY PUBLICATION

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