



Methodological Evaluation of Community Health Centre Systems in Ethiopia Using Multilevel Regression Analysis for Cost-Effectiveness Assessment

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Abstract

Community health centres (CHCs) play a crucial role in healthcare delivery in Ethiopia, particularly in rural and underserved areas. However, their effectiveness varies significantly across different regions. The study employed a mixed-methods approach combining quantitative (multilevel regression) and qualitative data collection. Data were sourced from CHCs across Ethiopia's diverse geographical regions, ensuring representation of varying socioeconomic conditions. Findings revealed that the level of healthcare service utilization significantly influenced cost-effectiveness metrics, with a moderate correlation coefficient ($r = -0.35$; CI: (-0.42, -0.28)). The multilevel regression analysis indicated that strategic investments in health education and community engagement programmes could enhance the efficiency of CHC operations. Policy recommendations include prioritising interventions aimed at improving service utilization rates and integrating community participation in healthcare planning and delivery. Community Health Centres, Multilevel Regression Analysis, Cost-Effectiveness, Ethiopia

Keywords: *African geography, community health centers, multilevel analysis, cost-effectiveness, regression, random effects, stratified sampling*

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