



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

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Abstract

Community health centers (CHCs) in Ethiopia play a crucial role in improving healthcare access and quality among underserved populations. A systematic review was conducted to analyse data from multiple studies evaluating CHCs. Multilevel logistic regression models were employed to assess the impact of various factors on healthcare outcomes and costs within the context of Ethiopian CHC systems. The multilevel regression analysis revealed that the implementation of telemedicine services significantly reduced travel-related costs for patients, indicating a cost-effective improvement in accessibility. This study provides robust evidence supporting the integration of innovative technologies like telemedicine into CHC systems to enhance their efficiency and sustainability. Policy makers are encouraged to invest in telehealth infrastructure and training programmes to further optimise CHC operations and improve patient outcomes. Community Health Centers, Ethiopia, Multilevel Regression Analysis, Cost-Effectiveness Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Geographic, multilevel, regression, cost-effectiveness, health systems, Ethiopia, Africa, randomized, cluster, analysis*

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