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Risk Reduction in Ethiopian Community Health Centres Systems: A Multilevel Regression Analysis

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Abstract

Community health centres in Ethiopia play a crucial role in providing essential healthcare services to rural populations. Despite their importance, there is limited empirical evidence on how these systems can be improved and optimised for better patient outcomes. A multilevel regression analysis was employed, incorporating data from multiple geographical levels including individual patient records and broader regional health indicators. The analysis accounts for both within-centre variability and centre differences. The multilevel regression model revealed that community health centres with higher investment in preventive healthcare measures saw a significant reduction ($p < 0.05$) in the prevalence of malaria infections by 18% compared to those without such investments. This study provides empirical evidence supporting the importance of targeted interventions and adequate funding for improving the efficiency and effectiveness of community health centres in Ethiopia. Policy makers should prioritise investment in preventive healthcare strategies, regular staff training, and infrastructure improvements within community health centres to enhance their impact on patient outcomes. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ethiopia, Geographic Information Systems, Community Health, Multilevel Analysis, Regression, Evaluation, Accessibility*

ABSTRACT-ONLY PUBLICATION

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