



Methodological Evaluation of Community Health Centre Systems in Ghana Using Difference-in-Differences to Assess System Reliability

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Abstract

Community health centres in Ghana are crucial for delivering healthcare services effectively. However, their reliability and efficiency have not been extensively evaluated. A difference-in-differences approach was employed to analyse data from community health centres across Ghana. The DiD model is represented by $\delta Y_i = \alpha + \beta t + \gamma C_i + \varepsilon_i$, where δY_i represents the change in service delivery metrics for individual i at time t , and C_i indicates whether an intervention was applied to centre i during time period t . Robust standard errors were used to account for potential confounding factors. The DiD analysis revealed that community health centres experienced a statistically significant increase in service delivery efficiency ($p < 0.05$) following the implementation of new protocols, indicating enhanced system reliability. This study provides empirical evidence supporting the effectiveness of intervention measures implemented by Ghana's community health centres. The findings suggest that ongoing monitoring and periodic evaluations are necessary to maintain and improve service delivery quality in these facilities. Further research should explore the scalability of these interventions across different regions. Community Health Centres, Difference-in-Differences (DiD), System Reliability, Ghana

Keywords: Ghana, Community Health Centers, Difference-in-Differences, Evaluation Methods, Public Health Systems, Geographic Medicine, Quantitative Research Techniques

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