



Methodological Assessment of Rural Clinics Systems in Rwanda Using Multilevel Regression Analysis for Clinical Outcome Evaluation

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Abstract

Rural clinics in Rwanda face challenges in delivering consistent clinical outcomes due to varying systemic factors. A multilevel regression model was employed to analyse data from multiple clinics nested within various regions in Rwanda, accounting for both individual patient-level and regional-level variations. The multilevel regression revealed that clinic staffing levels had a significant positive effect on clinical outcomes ($\beta = 0.52, p < 0.01$), with a standard error of 0.15 indicating the precision of this estimate. Rural clinics in Rwanda can improve their clinical outcomes through targeted interventions focused on increasing staffing levels. Policy recommendations include enhancing training programmes for clinic staff and implementing regional support networks to address disparities across different regions. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_{1p}$, and uncertainty reported using confidence-interval based inference.

Keywords: Rural, Africa, Multilevel, Regression, Evaluation, Outcome, Quality

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