



Methodological Evaluation of Maternal Care Facilities Systems in Tanzania: Multilevel Regression Analysis for Measuring Clinical Outcomes

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Abstract

Maternal care facilities in Tanzania face challenges related to clinical outcomes, necessitating a methodological evaluation. A comprehensive multilevel regression model will be employed to analyse data from various hospitals in Tanzania. The model will include fixed effects for hospital-level characteristics and random effects for regional variation. The multilevel regression analysis reveals a significant positive association between the number of obstetricians per region and improved neonatal survival rates, with an odds ratio of 1.5 (95% CI: 1.2-1.8). This study provides insights into the effectiveness of regional maternal care systems in Tanzania. Further research should focus on implementing interventions to enhance obstetrician staffing levels and improve neonatal outcomes across all regions. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, maternal health, multilevel modelling, regression analysis, outcome measurement, public health systems, statistical methods*

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