Multilevel Regression Analysis for Evaluating Maternal Care Facilities Systems in Kenyan Hospitals: A Methodological Assessment of Clinical Outcomes

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Abstract

Maternal care facilities in Kenya are essential for delivering high-quality healthcare services to pregnant women and newborns. However, there is a need for methodological evaluation of these systems to ensure optimal clinical outcomes. Multilevel regression analysis was employed to assess the impact of various factors at both individual and hospital levels. Data from over 500 hospitals were analysed to identify significant predictors of clinical outcomes. Results show that maternal care facilities in urban areas outperformed those in rural settings, with a statistically significant difference ($p < 0.05$) in the proportion of successful deliveries and neonatal survival rates between urban and rural hospitals. The multilevel regression analysis revealed important insights into the effectiveness of different maternal care facilities systems across Kenya, highlighting areas that require improvement to enhance clinical outcomes. Based on these findings, recommendations for policy makers include investing in infrastructure improvements and training programmes for healthcare providers in rural hospitals to improve their performance. Treatment effect was estimated with $text\{logit\}(\pi) = beta\, 0 + \vec{\beta}\, p\, X_i,$ and uncertainty reported using confidence-interval based inference.

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