



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

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Abstract

Maternal care facilities in Senegal play a critical role in the health management of pregnant women and their newborns. However, there is limited empirical research on evaluating the effectiveness of these systems. A longitudinal study design was employed, with data collected from various facilities across different regions of Senegal. The analysis utilised multilevel regression models accounting for hierarchical structures within and between facilities. Multilevel regression analysis revealed a significant reduction in neonatal mortality rates by 20% when maternal care facilities implemented improved hygiene practices. The findings suggest that enhanced hygiene measures are effective in improving clinical outcomes among newborns in Senegalese maternity units. Facility managers should prioritise the implementation of regular training programmes for healthcare providers focused on best hygiene and infection control practices. Maternal care, Senegal, Multilevel regression, Neonatal mortality, Hygiene practices Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, maternal health, multilevel modelling, regression analysis, outcome measurement, randomized controlled trials, community health systems

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