



Methodological Evaluation of Maternal Care Facilities Systems in Senegal Using Multilevel Regression Analysis for Clinical Outcome Assessment

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Abstract

Maternal care facilities in Senegal have faced challenges in ensuring optimal clinical outcomes for pregnant women and their newborns. A systematic literature review was conducted using databases such as PubMed, Embase, and Cochrane Library. Studies published between and were included if they reported data from maternal care facilities in Senegal and used multilevel regression analysis to assess clinical outcomes. Multilevel regression analyses revealed significant variations in clinical outcomes at the facility (level 1) and district (level 2) levels, with a moderate effect size for facility-level predictors on neonatal mortality rates. The multilevel regression framework provided insights into the hierarchical structure of maternal care systems and highlighted the importance of interventions targeting both individual facilities and broader health district contexts. Future research should prioritise longitudinal studies to track changes over time, and policy recommendations should be tailored to address specific regional disparities identified in this review. multilevel regression analysis, maternal healthcare, Senegal, clinical outcomes Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, multilevel modelling, outcome assessment, maternal health, resource evaluation, randomized controlled trials, qualitative methodology*

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