



# Methodological Evaluation of Rural Clinics Systems in Ethiopia Using Multilevel Regression Analysis for Clinical Outcomes Measurement

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## Abstract

Rural clinics in Ethiopia are crucial for healthcare delivery but face challenges in maintaining consistent clinical outcomes. A systematic literature review was conducted using rigorous search strategies and inclusion criteria based on relevance and quality of studies. Multilevel regression analyses revealed significant variability in clinical outcomes at both individual (patient) and clinic levels, with a moderate effect size for patient-level predictors. The methodological evaluation highlights the importance of multilevel modelling for understanding complex healthcare systems in Ethiopia. Further studies should consider incorporating longitudinal data to enhance the robustness of clinical outcome assessments. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** *Ethiopia, Multilevel Modelling, Rural Health Services, Outcome Evaluation, Methodology, Quantitative Research, Community Health Systems*

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