



Methodological Evaluation and Time-Series Forecasting of Rural Clinics Systems in South Africa: An Assessment of Clinical Outcomes

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Abstract

Methodological evaluation of rural clinics systems in South Africa is crucial for improving healthcare delivery and outcomes. The study employed mixed-methods approach including systematic review of existing literature, statistical modelling with time-series analysis for predictive modelling of clinical data. A significant proportion (35%) of clinic visits were found to have delayed care due to logistical challenges, necessitating intervention strategies to improve timely patient access. The findings highlight the need for standardised protocols and more robust infrastructure in rural clinics to enhance service delivery. Implementing a comprehensive quality assurance programme is recommended alongside enhanced logistics support to reduce delays. 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: *Sub-Saharan, rural, clustering, stratification, regression, longitudinal, validity*

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