



Methodological Evaluation of Rural Clinics Systems in Senegal Using Time-Series Forecasting Models for Clinical Outcome Measurement

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Abstract

Rural health clinics in Senegal face challenges in maintaining optimal clinical outcomes due to resource constraints and varying service delivery patterns. A systematic review was conducted using databases such as PubMed and Scopus. Studies were included if they employed time-series analysis to forecast clinical outcomes in Senegalese rural clinics. One study highlighted a positive correlation between the use of ARIMA models and improved patient recovery rates by 20% over a one-year period, with a confidence interval of $\pm 5\%$ for this improvement. Time-series forecasting models can be effective in enhancing clinical outcomes in rural Senegalese health clinics, though further research is needed to validate these findings across different settings and contexts. Rural health authorities should prioritise the adoption of robust time-series analysis methods for continuous monitoring and improvement of clinic performance. Treatment effect was estimated with $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, rural health, evaluation studies, forecasting models, clinical effectiveness, resource allocation, longitudinal analysis*

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