



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

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Abstract

Rural clinics in Nigeria face challenges in maintaining consistent clinical outcomes due to resource limitations. A systematic review of existing literature was conducted using databases such as PubMed and Scopus. Studies were selected based on inclusion criteria related to rural clinic systems in Nigeria. The analysis identified a trend where the use of ARIMA (AutoRegressive Integrated Moving Average) models showed significant improvement in forecasting accuracy for outpatient visits, with an average reduction of 15% in forecast errors over previous methods. Time-series forecasting models, particularly ARIMA, offer a robust method for rural clinics to enhance clinical outcome measurement and resource allocation strategies. Rural health authorities should invest in training staff on the application of ARIMA models and encourage their adoption across all clinics to improve service delivery and patient outcomes. rural clinics, Nigeria, clinical outcomes, time-series forecasting, ARIMA model 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, African, Spatial, Dynamics, Qualitative, Longitudinal, Regression*

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