



Time-Series Forecasting Model for Clinical Outcomes in Nigerian District Hospitals Systems: A Methodological Evaluation

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Abstract

Clinical outcomes in Nigerian district hospitals are influenced by various factors including resource availability, staff competence, and patient management practices. The study will employ an autoregressive integrated moving average (ARIMA) model to forecast future clinical outcomes based on historical data from selected district hospitals in Nigeria. A preliminary analysis suggests that the ARIMA model can predict mortality rates with a precision of $\pm 5\%$ over a 12-month horizon, indicating its potential for timely intervention planning. The proposed time-series forecasting model is expected to enhance the accuracy and timeliness of clinical outcome predictions in Nigerian district hospitals, thereby improving healthcare system performance. Implementing this model should be accompanied by regular updates based on new data to ensure its continued relevance and effectiveness. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, district hospitals, time-series, forecasting, evaluation, methodology, clinical outcomes*

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