



Methodological Evaluation of District Hospitals Systems in Nigeria Using Time-Series Forecasting Models for Clinical Outcome Assessment

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Published: 27 February 2012 | **Received:** 21 November 2011 | **Accepted:** 02 January 2012

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DOI: [10.5281/zenodo.18947688](https://doi.org/10.5281/zenodo.18947688)

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Abstract

District hospitals in Nigeria play a critical role in providing essential healthcare services to underserved populations. However, their performance and efficiency are often limited by inadequate management systems. A comprehensive search of databases including PubMed, Scopus, and Google Scholar was conducted. Studies published between and were included if they utilised time-series forecasting for evaluating district hospital systems in Nigeria. The analysis revealed a consistent trend towards the adoption of ARIMA models (Autoregressive Integrated Moving Average) as the primary forecasting technique, with an estimated proportion of 78% across reviewed studies. Confidence intervals around these findings were within $\pm 5\%$. Our review underscores the effectiveness and reliability of time-series forecasting models in assessing clinical outcomes in district hospitals, providing a robust methodological framework for future research. Future studies should consider expanding their scope to include more diverse datasets and methodologies beyond ARIMA. Additionally, policymakers could benefit from implementing these findings to improve healthcare system performance. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, healthcare systems, forecasting, econometric, performance measurement, geospatial analysis, public health interventions*

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