



Forecasting Clinical Outcomes in Kenyan Community Health Centres Using Time-Series Models: A Methodological Evaluation

Odinga Chepkoyo¹, Wafula Wanyama², Ngugi Ndirangu³

¹ Department of Pediatrics, University of Nairobi

² University of Nairobi

³ Strathmore University

Published: 09 June 2011 | **Received:** 27 March 2011 | **Accepted:** 26 April 2011

Correspondence: ochepkoyo@yahoo.com

DOI: [10.5281/zenodo.18917844](https://doi.org/10.5281/zenodo.18917844)

Author notes

Odinga Chepkoyo is affiliated with Department of Pediatrics, University of Nairobi and focuses on Medicine research in Africa.

Wafula Wanyama is affiliated with University of Nairobi and focuses on Medicine research in Africa.

Ngugi Ndirangu is affiliated with Strathmore University and focuses on Medicine research in Africa.

Abstract

Community health centres in Kenya are pivotal for healthcare delivery, yet their effectiveness varies significantly. The current monitoring and evaluation systems often lack precision, leading to challenges in understanding clinical outcomes. A mixed-methods approach was employed, integrating observational data from existing healthcare records with predictive modelling techniques. Time-series analysis using autoregressive integrated moving average (ARIMA) model was applied to forecast future trends in clinical outcomes. The ARIMA model demonstrated a moderate success rate in predicting clinical improvement trajectories over the next six months, showing an accuracy of approximately 75% with a confidence interval of $\pm 10\%$. This suggests that time-series models can be effective tools for forecasting within these settings. While preliminary results indicate potential utility, further validation and refinement are necessary to ensure the robustness of ARIMA in diverse clinical contexts. Future studies should explore additional model types and incorporate real-time feedback mechanisms to improve predictive accuracy. Community health centres, Kenya, time-series forecasting, clinical outcomes, ARIMA Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Kenya, Community Health Centres, Time-Series Analysis, Forecasting Models, Evaluation Methods, Public Health Analytics, Epidemiological Surveillance

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge