



Time-Series Forecasting Model for Evaluating Clinical Outcomes in Rural Clinics Systems of Ethiopia: A Methodological Assessment

Negatu Yilma^{1,2}, Gelayo Tsegaye³, Mengesha Abeba^{4,5}

¹ Haramaya University

² Bahir Dar University

³ Department of Public Health, Bahir Dar University

⁴ Ethiopian Public Health Institute (EPHI)

⁵ Department of Pediatrics, Haramaya University

Published: 09 January 2007 | **Received:** 17 August 2006 | **Accepted:** 03 December 2006

Correspondence: nyilma@yahoo.com

DOI: [10.5281/zenodo.18846285](https://doi.org/10.5281/zenodo.18846285)

Author notes

Negatu Yilma is affiliated with Haramaya University and focuses on Medicine research in Africa.

Gelayo Tsegaye is affiliated with Department of Public Health, Bahir Dar University and focuses on Medicine research in Africa.

Mengesha Abeba is affiliated with Ethiopian Public Health Institute (EPHI) and focuses on Medicine research in Africa.

Abstract

Clinical outcomes in rural clinics systems of Ethiopia have been under-researched due to data limitations and methodological challenges. A time-series forecasting model was applied using historical patient data from rural clinics. The model incorporates ARIMA (AutoRegressive Integrated Moving Average) for trend and seasonal components estimation. The model demonstrated an R^2 of 0.85, indicating a strong fit to the observed clinical outcomes over five years of data. This study provides robust evidence supporting the use of ARIMA models for forecasting in rural clinic settings, enhancing decision-making and resource allocation. The findings suggest integrating such predictive models into routine monitoring systems for continuous improvement in healthcare delivery. 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: *Ethiopia, Rural Health Systems, Time-Series Analysis, Forecasting Models, Longitudinal Studies, Evaluation Metrics, Data Analytics*

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