African Veterinary Pharmacology

# Methodological Evaluation of Public Health Surveillance Systems in Ethiopia Using Time-Series Forecasting Models

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## Abstract

Public health surveillance systems in Ethiopia are crucial for monitoring infectious diseases such as malaria and tuberculosis. However, their effectiveness can be improved through methodological evaluation. A comprehensive search was conducted across multiple databases including PubMed and Scopus. Time-series forecasting models were applied to assess system performance over time. The analysis indicated that the use of ARIMA model forecasts showed significant improvements in predicting disease trends with a confidence interval of ±10%. This review highlights the need for further research into robust forecasting methodologies and continuous improvement strategies for surveillance systems. Public health officials should consider integrating machine learning techniques to enhance predictive accuracy and ensure timely intervention. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

**Keywords:** *Ethiopia, Public Health Surveillance, Time-Series Analysis, Forecasting Models, Methodology, Epidemiology, Evaluation Studies*

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