



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

Ssekabamba Mukasa¹, Kizza Musoke²

¹ Makerere University, Kampala

² Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit

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Correspondence: smukasa@yahoo.com

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Author notes

Ssekabamba Mukasa is affiliated with Makerere University, Kampala and focuses on Medicine research in Africa. Kizza Musoke is affiliated with Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit and focuses on Medicine research in Africa.

Abstract

Public health surveillance systems in Uganda are critical for monitoring infectious diseases such as malaria and cholera. These systems often rely on time-series forecasting models to predict future trends based on historical data. A comprehensive search strategy was employed to identify relevant studies. Studies were assessed based on predefined inclusion criteria and quality assessment tools. The analysis revealed that while many studies utilised ARIMA models (e.g., $ARIMA(p, d, q)$), there is a need for more robust methods like state-space models or machine learning algorithms to enhance forecast accuracy, particularly in volatile health data. Despite the widespread use of time-series forecasting models, their application and evaluation require further refinement. This review highlights the importance of adopting advanced methodologies to improve public health surveillance system performance. Public health officials should consider integrating state-space models or machine learning techniques into existing systems to enhance forecast reliability and yield measurements in Uganda.

Keywords: *Sub-Saharan, surveillance, forecasting, evaluation, intervention, epidemiology, methodology*

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