African Biomedical Engineering (Clinical Aspects)

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

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Abstract

Public health surveillance systems are crucial for monitoring disease trends and implementing effective interventions in Uganda. A systematic literature review was conducted to assess the methodologies used in public health surveillance systems. Time-series forecasting models were analysed to predict and forecast disease trends. The analysis revealed that while some studies employed ARIMA models with a confidence interval of ±5%, others lacked robust standard errors, indicating variability in methodological consistency across different studies. Despite the heterogeneity in methodologies, the use of time-series forecasting models showed promise for improving yield in public health surveillance systems. Future research should focus on harmonizing methodologies and incorporating uncertainty quantification to enhance the reliability of forecasts in Ugandan public health systems. Public Health Surveillance, Time-Series Forecasting, ARIMA Models, Ugandan Public Health Systems Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, surveillance, forecasting, evaluation, methodology, public health, time-series*

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