African Dietetics Practice

Methodological Evaluation of Public Health Surveillance Systems in Kenya Using Time-Series Forecasting Models for Reliability Assessment

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Abstract

Public health surveillance systems are crucial for monitoring disease trends and resource allocation in Kenya. However, their reliability and effectiveness have not been rigorously evaluated. The study utilised a time-series forecasting model (e.g., ARIMA) to analyse surveillance data from two recent years. Robust standard errors and confidence intervals were employed for uncertainty assessment. A trend analysis revealed an upward shift in the number of reported cases over the past year, indicating potential underreporting or delayed reporting mechanisms within the system. The time-series forecasting model successfully identified patterns indicative of reliability issues, suggesting improvements are needed to enhance data quality and timeliness. Immediate steps should include enhancing training for surveillance staff on timely reporting protocols and improving infrastructure to reduce delays in case documentation. Public Health Surveillance, Time-Series Forecasting, Reliability Assessment Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, public health surveillance, time-series analysis, forecasting models, reliability assessment, data quality, statistical methods*

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