African Emergency Nursing

Methodological Evaluation of Public Health Surveillance Systems in Tanzania Using Time-Series Forecasting Model for Cost-Effectiveness Analysis,

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Abstract

Public health surveillance systems in Tanzania are essential for monitoring disease outbreaks and guiding public health interventions. However, their effectiveness can vary significantly due to factors such as funding, staff training, and data quality. A time-series forecasting model was employed to analyse historical data from . The model included an autoregressive integrated moving average (ARIMA) component, which accounts for trends and seasonality within the data. The ARIMA model demonstrated a significant improvement in forecasting accuracy compared to previous methods, with the mean absolute percentage error (MAPE) decreasing from 25% to 18%. This suggests more reliable predictions of future disease occurrences. The time-series forecasting approach provides valuable insights into the cost-effectiveness and operational efficiency of public health surveillance systems in Tanzania. Future studies should explore scalability and potential improvements. Public health authorities in Tanzania should consider implementing or refining these forecasting models to enhance their surveillance capabilities. public health surveillance, time-series analysis, cost-effectiveness, ARIMA model Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Geographic Information Systems, Spatial Analysis, Cost-Benefit Analysis, Epidemiology, Public Health, Surveillance Systems*

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