African Endocrine Surgery

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

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Abstract

Public health surveillance systems in Uganda are critical for monitoring disease prevalence and guiding policy responses. However, the effectiveness of these systems varies widely, necessitating methodological evaluation to improve their utility. A comprehensive literature review was conducted to identify relevant studies. Time-series forecasting models were applied to analyse data from these studies, incorporating robust standard errors for uncertainty quantification. The analysis revealed a significant trend in disease prevalence reduction across the evaluated surveillance systems, with reductions ranging from 15% to 30%, indicating effective monitoring and intervention strategies. Time-series forecasting models provided valuable insights into the effectiveness of public health surveillance systems in Uganda, highlighting areas for improvement. Future research should focus on integrating feedback loops within surveillance systems to enhance their predictive accuracy and responsiveness. Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, methodology, surveillance, time-series, econometric, intervention, evaluation*

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