African Traditional Medicine (Pharmaceutical aspects)

Time-Series Forecasting Model for Evaluating Public Health Surveillance Systems in Ethiopia: A Reliability Assessment

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Abstract

Public health surveillance systems are crucial for monitoring disease outbreaks in Ethiopia. However, their effectiveness can be evaluated through time-series forecasting models to assess reliability. A time-series forecasting model was applied to historical data from the Ethiopian Ministry of Health. The model included an autoregressive integrated moving average (ARIMA) approach with robust standard errors for uncertainty quantification. The ARIMA model predicted a 95% confidence interval for future surveillance trends, indicating a moderate level of reliability in forecasting system performance. The time-series forecasting model provided insights into the reliability and potential improvements needed for public health surveillance systems in Ethiopia. Enhancements to data collection methods and training staff are recommended to improve the forecasting accuracy and overall system effectiveness. public health, surveillance systems, time-series analysis, ARIMA, 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: *Ethiopia, Geographic Information Systems, Time-Series Analysis, Reliability Assessment, Public Health Surveillance, Forecasting Models, Geostatistics*