African Public Health Nursing

Methodological Evaluation of Public Health Surveillance Systems in Ethiopia: A Time-Series Forecasting Model for Clinical Outcomes Measurement

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Published: 28 April 2012 | **Received:** 13 December 2011 | **Accepted:** 03 March 2012

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DOI: 10.5281/zenodo.18946718

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Abstract

Public health surveillance systems in Ethiopia are crucial for monitoring disease trends and guiding intervention strategies. However, their effectiveness varies significantly across different regions. A comprehensive search strategy was employed to identify relevant studies published between and . Studies were selected based on predefined eligibility criteria, including the use of time-series forecasting for measuring clinical outcomes in public health surveillance systems. The analysis revealed a mixed performance in terms of data collection methods and model accuracy, with some models showing forecast errors within ±15% of actual values over a one-year period. Despite variability, the use of time-series forecasting models enhances the ability to predict clinical outcomes based on surveillance system data. Enhanced training programmes for public health officials and standardised protocols are recommended to improve the reliability of surveillance systems in Ethiopia. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African health systems, surveillance methods, public health metrics, time-series analysis, forecasting models, disease surveillance, geographic information systems*

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