Methodological Evaluation of Public Health Surveillance Systems in Uganda: A Time-Series Forecasting Approach to Assess System Reliability

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Abstract

Public health surveillance systems in Uganda are critical for monitoring infectious diseases and ensuring timely interventions. A systematic literature review was conducted using databases such as PubMed and Google Scholar. Time-series models were applied to assess system performance. The analysis revealed a significant upward trend in disease incidence data over the past five years (direction, proportion increase of 25%). Public health surveillance systems in Uganda show variable reliability, with some systems performing better than others. Investment should be directed towards strengthening systems that consistently underperform. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

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