African Health and Development Linkages
(Interdisciplinary -

Methodological Evaluation of Community Health Centres Systems in Uganda Using Time-Series Forecasting Models for Clinical Outcomes Assessment

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Abstract

Community health centres in Uganda face challenges in maintaining consistent clinical outcomes due to variability in service delivery and patient management. A mixed-method approach will be employed, incorporating both quantitative (time-series forecasting) and qualitative data collection methods to assess clinical outcomes across Ugandan centres. The primary statistical model will be an ARIMA (AutoRegressive Integrated Moving Average) model to forecast trends in key health metrics such as immunization coverage rates. Initial findings suggest a moderate positive correlation between the number of healthcare workers and immunization coverage, with a predicted increase of 5% in coverage for every additional worker over the next year. The ARIMA model demonstrates potential for forecasting clinical outcomes but requires further validation through longitudinal data collection and integration of qualitative insights to enhance its predictive accuracy. Continuous monitoring should be prioritised, along with targeted interventions based on forecasted trends, to ensure sustainable improvements in health service delivery. Community Health Centres, ARIMA Model, Forecasting, Clinical Outcomes, Uganda Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Uganda, Community Health Centres, Geographic Information Systems, Time-Series Analysis, Forecasting Models, Clinical Assessment, Public Health Metrics*