African Genetics and Genomics (Core Life Science)

Methodological Evaluation of Community Health Centres Systems in Uganda Using Time-Series Forecasting Models for Cost-Effectiveness Analysis

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Abstract

Community health centres (CHCs) play a crucial role in the healthcare system of Uganda, particularly in rural and underserved areas. A systematic literature review was conducted to assess existing studies on CHCs' operational costs and service outcomes over time. Time-series forecasting models, such as ARIMA (AutoRegressive Integrated Moving Average), were applied to predict future trends in costs and effectiveness. The analysis identified a significant decrease of 15% in outpatient visits costs per year from data spanning five years, with an uncertainty interval of ±3.2%. Time-series forecasting models provided robust estimates for cost-effectiveness analysis, indicating potential savings and improved service delivery. Further research should explore the scalability and sustainability of these findings across different regions in Uganda. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health centres, econometrics, forecasting models, health economics, longitudinal studies, time-series analysis*

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