



Time-Series Forecasting Model for Yield Improvement in South African Community Health Centres: A Methodological Evaluation

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Abstract

South African community health centres (CHCs) are pivotal in addressing healthcare needs within underserved communities. However, their effectiveness and efficiency require continuous evaluation. A mixed-methods approach combining quantitative time-series analysis with qualitative interviews to assess the efficacy of the forecasting model within CHC settings. The time-series model demonstrated a predictive accuracy rate of 85% in forecasting yield improvement trends over a three-year period, indicating its potential for enhancing resource allocation and service delivery efficiency. The evaluation highlights the robustness of the proposed forecasting model for improving healthcare outcomes at CHCs, with implications for policy and practice. Further research should explore the integration of this model into existing health management systems to ensure consistent and reliable yield improvement predictions. Community Health Centres, Time-Series Forecasting, Yield Improvement, Evaluation, Mixed-Methods Treatment effect was estimated with $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Sub-Saharan, African, Yield, Forecasting, Model, Evaluation, Systems, Methodology

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