Methodological Evaluation of District Hospitals Systems in Uganda Using Time-Series Forecasting Models for Yield Improvement Analysis

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Abstract

District hospitals in Uganda face challenges in service delivery efficiency due to various systemic issues. A mixed-methods approach was employed, incorporating both quantitative (time-series forecasting) and qualitative data collection methods to assess system performance over a period of one year. Time-series models showed an average yield improvement of 15% in key operational metrics such as patient throughput and resource utilization. The time-series forecasting models demonstrated significant potential for enhancing the efficiency and effectiveness of district hospital operations in Uganda, particularly in areas related to patient care flow and resource allocation. Immediate implementation of these models within district hospitals is recommended alongside ongoing monitoring and refinement based on feedback from healthcare providers and patients. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow}p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African healthcare, yield improvement, time-series analysis, forecasting models, quantitative methods, qualitative methods, intervention studies*

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