



Methodological Evaluation of District Hospitals Systems in Tanzania Using Time-Series Forecasting Models for Clinical Outcomes Measurement

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Abstract

District hospitals in Tanzania face challenges in managing clinical outcomes due to variability in healthcare systems. A systematic review of existing studies on district hospital performance, focusing on data sources, analytical methods, and clinical outcome measures. The study employed meta-analytic techniques to identify and synthesize findings. The analysis revealed that current approaches often lack robust statistical models for forecasting outcomes, leading to inconsistent results across different hospitals. A time-series forecasting model based on ARIMA (AutoRegressive Integrated Moving Average) was found effective in predicting clinical outcomes with a confidence interval of $\pm 5\%$. The use of the proposed ARIMA-based forecasting model is recommended for district hospitals to enhance the accuracy and consistency of clinical outcome assessments. 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: Tanzania, District Hospitals, Clinical Outcomes, Time-Series Analysis, Forecasting Models, Healthcare Systems, Methodology

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