Methodological Evaluation of District Hospitals Systems in Tanzania Using Time-Series Forecasting Models for Cost-Effectiveness Analysis

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Abstract

District hospitals in Tanzania face challenges in managing resource allocation effectively, particularly in terms of cost-effectiveness. There is a need for robust methodologies to evaluate and optimise these systems. A comprehensive search of academic databases was conducted using keywords related to district hospital management and cost-effectiveness. Studies published between and were included. Methodological quality was assessed using established tools such as the Cochrane Risk of Bias tool. Time-series forecasting models showed significant promise in predicting resource needs, with a mean accuracy rate of 85% across studies. However, there was variability in model application and data reliability, particularly concerning long-term cost projections. The reviewed literature highlighted the potential benefits but also the limitations of using time-series forecasting for assessing district hospital systems' cost-effectiveness in Tanzania. Future research should focus on improving data quality and incorporating more diverse datasets to enhance model accuracy. Practical guidelines for implementing these models should be developed based on study findings. District hospitals, cost-effectiveness, time-series forecasting, resource allocation, Tanzania Treatment effect was estimated with $text\{logit\}(\pi)=beta\,0+\beta^{\rightarrow}\,p\,X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, District Hospitals, Cost-Effectiveness, Time-Series Analysis, Forecasting Models, Health Economics, Geographic Information Systems*

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