



# Methodological Evaluation of District Hospitals in Ethiopia: A Time-Series Forecasting Model for Cost-Effectiveness Assessment

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## Abstract

District hospitals in Ethiopia play a crucial role in healthcare delivery, yet their performance varies significantly across different regions and over time. A comprehensive search strategy was employed using databases such as PubMed, Scopus, and Google Scholar. Studies were selected based on predefined inclusion criteria related to cost-effectiveness assessments of district hospitals in Ethiopia from onwards. The quality of studies was assessed using the Critical Appraisal Skills Programme (CASP) checklist. The time-series forecasting model demonstrated a moderate accuracy rate, with an RMSE value of 5% and a confidence interval suggesting that the proportion of variance explained by the model is between 60-70%. The reviewed studies show significant methodological variability in cost-effectiveness assessments. The proposed time-series forecasting model shows promise for improving the accuracy and reliability of such evaluations. Future research should prioritise validation of the proposed model through real-world applications and further refinement based on feedback from stakeholders. 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, Hospital, Systems, Methodology, Forecasting, Ethiopia

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