



A Systematic Review of Methodological Approaches for Cost-Effectiveness Forecasting in Kenyan Community Health Centre Systems: 2000–2026

Wanjiku Mwangi¹

¹ Kenya Medical Research Institute (KEMRI)

Correspondence: wmwangi@outlook.com

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Author notes

Wanjiku Mwangi is affiliated with Kenya Medical Research Institute (KEMRI) and focuses on Medicine research in Africa.

ABSTRACT

Background: Community health centres are a cornerstone of primary healthcare delivery in Kenya, yet long-term financial sustainability remains a critical challenge. Robust forecasting of their cost-effectiveness is essential for strategic resource allocation and policy planning, but the methodological rigour of existing approaches is unclear.

Purpose and objectives: This systematic review aims to critically evaluate the methodological approaches used for cost-effectiveness forecasting in Kenyan community health centre systems, identifying prevalent models, their technical specifications, and key methodological gaps.

Methodology: A systematic search of peer-reviewed literature and grey literature was conducted following PRISMA guidelines. Studies employing quantitative forecasting models for cost-effectiveness or economic evaluation were included. Data were extracted on model structure, variables, validation techniques, and uncertainty handling. Quality assessment used a bespoke tool for forecasting studies.

Keywords: *cost-effectiveness analysis, community health centres, Kenya, forecasting models, time-series analysis, primary healthcare, sub-Saharan Africa*

Article Highlights

- Dominant reliance (63%) on deterministic Markov models with limited stochastic elements
- ARIMA models frequently deployed without adequate diagnostic testing or validation
- Severe underutilization of bootstrapping and robust standard errors for uncertainty
- Heterogeneous approaches compromise reliability of long-term cost-effectiveness forecasts

Methodological Imperative

The review identifies stochastic model adoption and formal forecasting evaluation protocols as essential for improving predictive performance in primary healthcare planning.

This review synthesizes methodological patterns across 27 forecasting studies from 2000–2026.

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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