



Time-Series Forecasting Model for Evaluating Cost-Effectiveness of Community Health Centres in Kenya

Kerubo Chepket¹, Nganga Githae^{2,3}, Chirauke Muriuki^{2,4}, Ruto Wanjiku^{5,6}

¹ Department of Pediatrics, African Population and Health Research Center (APHRC)

² Department of Epidemiology, African Population and Health Research Center (APHRC)

³ Department of Clinical Research, Egerton University

⁴ University of Nairobi

⁵ Maseno University

⁶ Department of Surgery, African Population and Health Research Center (APHRC)

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Correspondence: kchepket@aol.com

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Author notes

Kerubo Chepket is affiliated with Department of Pediatrics, African Population and Health Research Center (APHRC) and focuses on Medicine research in Africa.

Nganga Githae is affiliated with Department of Epidemiology, African Population and Health Research Center (APHRC) and focuses on Medicine research in Africa.

Chirauke Muriuki is affiliated with University of Nairobi and focuses on Medicine research in Africa.

Ruto Wanjiku is affiliated with Maseno University and focuses on Medicine research in Africa.

Abstract

Community health centres (CHCs) play a crucial role in healthcare delivery in Kenya, particularly addressing the needs of underserved populations. However, their cost-effectiveness over time remains an area for methodological evaluation. A time-series forecasting model was employed to analyse data from CHCs in Kenya, incorporating robust standard errors to account for uncertainty in predictions. The study aimed at understanding how these centres have evolved over the period under review. The model indicated a steady increase in patient consultations and preventive care services provided by CHCs, with an estimated growth rate of 5% per annum, suggesting sustained cost-effectiveness over time. This study provides empirical evidence on the long-term viability of CHCs in Kenya, highlighting their role in improving healthcare access and efficiency. Further research should explore interventions to optimise resource allocation within CHCs for better service delivery and patient outcomes. Community Health Centres, Cost-effectiveness, Time-series Forecasting, Healthcare Systems, Kenya Treatment effect was estimated with $\text{text}\{\logit\}(\pi) = \beta_0 + \beta_1 X_{it}$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, cost-effectiveness analysis, forecasting models, healthcare delivery systems, longitudinal studies, population health metrics, service utilization patterns

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