Time-Series Forecasting Model for Evaluating Cost-Effectiveness of Community Health Centre Systems in South Africa: A Methodological Study

Nokuhle Sithole[1], Siyavhuwa Makhene[2], Bongani Khumalo[3]

[1] University of Venda

[2] Nelson Mandela University

[3] Department of Surgery, University of Venda

Correspondence: nsithole@yahoo.com

Author notes

Nokuhle Sithole is affiliated with University of Venda and focuses on Medicine research in Africa.
Siyavhuwa Makhene is affiliated with Nelson Mandela University and focuses on Medicine research in Africa.
Bongani Khumalo is affiliated with Department of Surgery, University of Venda and focuses on Medicine research in Africa.

Abstract

Community health centres (CHCs) play a crucial role in South Africa's healthcare system by providing primary care services to underserved populations. However, their cost-effectiveness remains an area of interest for policymakers and stakeholders. A time-series forecasting model was employed to analyse historical data from multiple CHCs across South Africa. The model accounts for seasonal variations and trends in healthcare utilization patterns. The analysis revealed a significant positive correlation between the number of consultations per month and economic growth indicators, suggesting that improved service delivery could enhance economic outcomes. This study provides robust evidence on how time-series forecasting can be used to assess cost-effectiveness within CHC systems in South Africa. The findings underscore the potential for targeted interventions to optimise resource utilization. Policymakers should consider implementing a comprehensive monitoring system using similar forecasting models to evaluate ongoing service improvements and financial sustainability of CHCs. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\,X_i$, and uncertainty reported using confidence-interval based inference.

ABSTRACT-ONLY PUBLICATION

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

✉ REQUEST FULL PAPER

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa

Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge