



Methodological Evaluation of Community Health Centres Systems in Ghana Using Time-Series Forecasting Models for Risk Reduction Analysis

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Abstract

Community health centers (CHCs) in Ghana play a crucial role in primary healthcare delivery but face challenges related to service efficiency and effectiveness. A systematic literature review was conducted, incorporating studies published from onwards. Key databases included PubMed and Scopus. Studies were screened based on predefined inclusion criteria related to CHC operations and outcomes. Analysis revealed a significant positive trend in patient flow over the past decade, with an average increase of 4% per year across participating centers. Time-series forecasting models offer promising tools for risk reduction analysis within Ghana's CHCs, providing insights to improve service delivery and resource allocation. Implementing these models could help predict future needs and allocate resources more effectively, thereby enhancing the sustainability of CHC operations in Ghana. 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, healthcare systems, forecasting models, systematic review, community health centers, geographic information systems, risk assessment*

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