



Methodological Evaluation of Community Health Centre Systems in Senegal Using Panel Data for Efficiency Analysis

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Abstract

Community health centres (CHCs) in Senegal play a critical role in delivering primary healthcare services to rural populations. However, there is limited systematic evaluation of their efficiency and operational performance. The study employed a comprehensive literature search strategy across databases such as PubMed, Scopus, and Web of Science. Papers published between and were included if they utilised panel data methods to measure the operational efficiency of CHCs in Senegal. A total of 34 studies met the inclusion criteria. The findings suggest that while some studies employed stochastic frontier analysis (SFA) with robust standard errors, others used alternative methodologies such as data envelopment analysis (DEA), and most lacked detailed breakdowns of efficiency gains by service categories. Despite the diversity in methods applied, this review highlights the need for harmonized approaches to ensure consistent results across studies. Future research should advocate for standardised methodologies that incorporate detailed breakdowns of efficiency measures by CHC services and population health outcomes. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, community health systems, econometrics, panel data analysis, efficiency measurement, health service delivery, resource allocation

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