



Evaluating Community Health Centre Systems in Nigeria Using Panel Data for Risk Reduction Measurement

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Abstract

Community health centres (CHCs) play a critical role in healthcare delivery within Nigeria's fragmented public health system. Panel data was collected from 20 CHCs across Nigeria over five years, with an econometric model estimating the effect of various interventions on patient flow and service quality. The panel data revealed a significant positive correlation ($p < 0.05$) between timely medication supply and reduced patient wait times, indicating that proper stock management can reduce risks to patients by up to 30%. CHCs need improved inventory management practices to enhance service quality and risk reduction in health outcomes. Strengthening CHC systems with regular stock audits and training on best inventory practices is recommended for effective patient care and risk mitigation. community healthcare, public health, panel data analysis, risk reduction, Nigeria Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, community health centres, panel data analysis, risk assessment, public health systems, econometric methods, healthcare delivery

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