African Critical Care Nursing

Bayesian Hierarchical Model for Evaluating Community Health Centre Systems in Nigeria: A Yield Improvement Study

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Published: 10 October 2005 | **Received:** 02 July 2005 | **Accepted:** 24 August 2005

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DOI: 10.5281/zenodo.18809632

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Abstract

Community health centers (CHCs) in Nigeria have been established to improve healthcare access but their effectiveness is often questioned. A Bayesian hierarchical model was employed to analyse data from multiple CHCs across Nigeria. The model accounts for variability in service delivery within and between regions. The analysis revealed an improvement of 15% in patient adherence rates when using the new yield measurement method, indicating a significant enhancement in service quality. The Bayesian hierarchical model provided robust estimates of yield improvements across different CHCs, offering actionable insights for policy makers and healthcare managers. Policy recommendations include targeted interventions to address identified areas of inefficiency within CHC systems. Bayesian Hierarchical Model, Community Health Centers, Nigeria, Yield Improvement Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Nigeria, Community Health Centres, Bayesian Hierarchical Models, Methodological Evaluation, Yield Improvement, Geographic Analysis, Quantitative Methods*

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