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Methodological Evaluation of Community Health Centre Systems in Uganda Using Bayesian Hierarchical Models

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Abstract

Community health centres (CHCs) play a crucial role in healthcare delivery in Uganda, particularly for underserved populations. However, there is variability in their implementation and effectiveness across different regions. A comprehensive search strategy was employed to identify relevant studies, which were then assessed using predefined inclusion criteria. Quantitative data from these studies were analysed using Bayesian hierarchical models to evaluate adoption rates within CHCs. Bayesian hierarchical models showed that adoption rates of CHC systems varied significantly across different regions in Uganda, with a notable trend indicating higher adoption in urban areas compared to rural settings ($p < 0.05$). This review highlights the importance of adopting robust statistical methods for evaluating community health centre systems and suggests Bayesian hierarchical models as a promising approach. Future research should consider integrating Bayesian hierarchical models into existing evaluation frameworks to improve accuracy and reliability of adoption rate measurements in CHCs. Treatment effect was estimated with $text\{logit\}(\pi)=beta 0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Bayesian hierarchical models, Community health centres, Methodological evaluation, Quantitative methods, Statistical analysis, Systematic reviews*

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