African Veterinary Microbiology

Bayesian Hierarchical Model for Evaluating Cost-Effectiveness of Community Health Centres in Kenya

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Abstract

Community health centres in Kenya have been established to improve healthcare access for underserved populations. However, their cost-effectiveness remains a subject of interest and debate. A Bayesian hierarchical model was employed to estimate the cost-effectiveness of community health centres in Kenya. The model accounts for variability across different regions and takes into consideration healthcare outcomes such as disease prevalence and patient satisfaction. The analysis revealed that a significant proportion (65%) of the variation in service delivery efficiency could be attributed to regional differences, indicating the need for tailored interventions. The Bayesian hierarchical model provides insights into how community health centres can be optimised for cost-effectiveness and improved patient outcomes. Future research should explore additional factors affecting healthcare performance. Policy makers are recommended to allocate resources more flexibly based on regional needs, focusing on areas where efficiency gains could have the greatest impact. Treatment effect was estimated with $text\{logit\}(\pi)=beta 0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Community health centers, Bayesian hierarchical models, cost-effectiveness analysis, Kenya, epidemiology, randomized controlled trials, geographic information systems*

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