



Bayesian Hierarchical Model Evaluation of District Hospital Systems in Kenya, 2004

Wambugu Mwanzo^{1,2}, Mwangi Gitonga^{3,4}, Odhiambo Kinyanjui⁵

¹ Moi University

² African Population and Health Research Center (APHRC)

³ Department of Surgery, African Population and Health Research Center (APHRC)

⁴ Department of Internal Medicine, Moi University

⁵ Department of Internal Medicine, International Centre of Insect Physiology and Ecology (ICIPE), Nairobi

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Correspondence: wmwanzo@yahoo.com

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Author notes

Wambugu Mwanzo is affiliated with Moi University and focuses on Medicine research in Africa.

Mwangi Gitonga is affiliated with Department of Surgery, African Population and Health Research Center (APHRC) and focuses on Medicine research in Africa.

Odhiambo Kinyanjui is affiliated with Department of Internal Medicine, International Centre of Insect Physiology and Ecology (ICIPE), Nairobi and focuses on Medicine research in Africa.

Abstract

District hospitals in Kenya play a crucial role in healthcare delivery, but their performance varies significantly across different regions. A Bayesian hierarchical model was developed to analyse data from multiple districts, incorporating spatial dependencies and heterogeneity among hospitals. Uncertainty quantification is achieved through posterior predictive checks on simulated datasets. The model identified a systematic underperformance in diagnostic accuracy across several district hospitals, with proportions of incorrect diagnoses ranging between 15% and 20%. This study highlights significant disparities in healthcare quality among Kenyan district hospitals and underscores the need for targeted interventions to improve diagnostic reliability. Immediate attention should be given to upgrading diagnostic equipment and training, with a focus on high-risk areas identified by the model. Monitoring systems should also be strengthened to ensure continuous improvement. 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: Kenya, District Hospitals, Hierarchical Models, Bayesian Statistics, Methodology, Evaluation, Reliability

ABSTRACT-ONLY PUBLICATION

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