



Bayesian Hierarchical Model Evaluation of Clinical Outcomes in Rural Clinics Systems, Rwanda

Kigutu Mutabazi¹, Gaterwa Nabanje², Habimana Bizimungu^{2,3}

¹ Department of Surgery, University of Rwanda

² Department of Pediatrics, African Leadership University (ALU), Kigali

³ Department of Public Health, University of Rwanda

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Correspondence: kmutabazi@hotmail.com

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Author notes

Kigutu Mutabazi is affiliated with Department of Surgery, University of Rwanda and focuses on Medicine research in Africa.

Gaterwa Nabanje is affiliated with Department of Pediatrics, African Leadership University (ALU), Kigali and focuses on Medicine research in Africa.

Habimana Bizimungu is affiliated with Department of Pediatrics, African Leadership University (ALU), Kigali and focuses on Medicine research in Africa.

Abstract

Clinical outcomes in rural clinics systems have been a focus of interest for improving healthcare services in developing countries. A Bayesian hierarchical model was developed to assess the impact of various factors on clinical outcomes, including patient demographics and clinic quality indicators. Data were collected through structured surveys conducted in . The analysis revealed significant variation in average treatment success rates across different clinics (15% - 30%), with some clinics showing a higher likelihood of successful treatments compared to others. The findings suggest that clinic-specific improvements are necessary for achieving consistent and high-quality clinical outcomes. Clinics should be supported in enhancing their operational efficiency, particularly focusing on reducing patient wait times and increasing treatment success rates. 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: Rwanda, Bayesian, Hierarchical, Model, Evaluation, Clinical, Outcomes

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