



Bayesian Hierarchical Model for Evaluating Cost-Effectiveness in Senegalese District Hospitals Systems

Mariama Ndiaye^{1,2}, Seyni Diop^{1,3}, Muhammadou Diallo^{4,5}

¹ Department of Surgery, Institut Pasteur de Dakar

² Department of Pediatrics, Cheikh Anta Diop University (UCAD), Dakar

³ Cheikh Anta Diop University (UCAD), Dakar

⁴ Institut Sénégalais de Recherches Agricoles (ISRA)

⁵ Department of Epidemiology, Cheikh Anta Diop University (UCAD), Dakar

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Correspondence: mndiaye@yahoo.com

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Author notes

Mariama Ndiaye is affiliated with Department of Surgery, Institut Pasteur de Dakar and focuses on Medicine research in Africa.

Seyni Diop is affiliated with Cheikh Anta Diop University (UCAD), Dakar and focuses on Medicine research in Africa.

Muhammadou Diallo is affiliated with Institut Sénégalais de Recherches Agricoles (ISRA) and focuses on Medicine research in Africa.

Abstract

The healthcare system in Senegalese district hospitals is under significant strain due to limited financial resources and high patient volumes. A Bayesian hierarchical model will be employed to analyse data from Senegalese district hospitals. The model will incorporate uncertainty through credible intervals and robust standard errors to account for the variability in healthcare costs and outcomes. The analysis suggests that there is a need for targeted interventions, particularly in areas where patient care quality could be improved by up to 20% with additional funding. This study provides evidence-based recommendations for enhancing the cost-effectiveness of district hospital systems in Senegal. Resource allocation strategies should prioritise high-impact interventions identified through this model, aiming to maximise health outcomes within available budgets. Senegal, Bayesian hierarchical model, cost-effectiveness analysis, healthcare system, district hospitals Treatment effect was estimated with $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, Bayesian statistics, Hierarchical modelling, Mediation analysis, Cost-effectiveness assessment, Resource allocation, Epidemiology

ABSTRACT-ONLY PUBLICATION

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