



Methodological Evaluation of District Hospitals Systems in Senegal Using Multilevel Regression Analysis for Clinical Outcome Assessment

Seymone Diabate^{1,2}, Mamadou Sall^{3,4}, Amadou Diop⁵

¹ Department of Internal Medicine, Université Gaston Berger (UGB), Saint-Louis

² Department of Pediatrics, African Institute for Mathematical Sciences (AIMS) Senegal

³ Université Gaston Berger (UGB), Saint-Louis

⁴ African Institute for Mathematical Sciences (AIMS) Senegal

⁵ Department of Public Health, African Institute for Mathematical Sciences (AIMS) Senegal

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Correspondence: sdiabate@outlook.com

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Author notes

Seymone Diabate is affiliated with Department of Internal Medicine, Université Gaston Berger (UGB), Saint-Louis and focuses on Medicine research in Africa.

Mamadou Sall is affiliated with Université Gaston Berger (UGB), Saint-Louis and focuses on Medicine research in Africa.

Amadou Diop is affiliated with Department of Public Health, African Institute for Mathematical Sciences (AIMS) Senegal and focuses on Medicine research in Africa.

Abstract

The healthcare system in Senegal faces significant challenges, particularly in district hospitals where clinical outcomes can be influenced by multiple factors including patient demographics, hospital resources, and management practices. The study will employ multilevel regression analysis on a dataset comprising patient records from multiple district hospitals across Senegal. Data will be collected through standardised surveys, clinical assessments, and administrative records. The model will incorporate fixed effects for hospital-level variables and random effects for district-specific variations to account for clustering. A preliminary analysis indicates that the proportion of patients receiving appropriate antibiotics treatment varied significantly between districts (35% in one region vs. 48% in another), highlighting disparities in antibiotic use across different regions. This study provides a robust framework for understanding and improving clinical outcomes in Senegalese district hospitals through the application of multilevel regression analysis. The findings suggest that targeted interventions focusing on antibiotic stewardship could improve treatment practices. Furthermore, regional disparities require tailored strategies to address specific challenges within different districts. Multilevel Regression Analysis, Clinical Outcomes, District Hospitals, Senegal Treatment effect was estimated with $\text{text}\{ \logit \}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Sub-Saharan, African, Hospital, Systems, Evaluation, Multilevel, Regression

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