African Ethnomusicology Research

Multilevel Regression Analysis of Clinical Outcomes in Rwanda's District Hospitals Systems: A Methodological Evaluation

Nshuti Muhirwa[1], **Kizito Bizimungu**[2], **Gatwali Umutabari**[2]

[1] Department of Public Health, University of Rwanda

[2] Rwanda Environment Management Authority (REMA)

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Correspondence: nmuhirwa@yahoo.com

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Author notes

Nshuti Muhirwa is affiliated with Department of Public Health, University of Rwanda and focuses on Medicine research in Africa.

Kizito Bizimungu is affiliated with Rwanda Environment Management Authority (REMA) and focuses on Medicine research in Africa.

Gatwali Umutabari is affiliated with Rwanda Environment Management Authority (REMA) and focuses on Medicine research in Africa.

Abstract

Rwanda's district hospitals play a critical role in providing healthcare services across diverse geographic regions with varying socioeconomic conditions. A multilevel regression analysis was employed, incorporating data from multiple levels including hospital-level factors and patient-level variables. The model accounts for both within-hospital variability and hospital differences. The multilevel regression analysis revealed significant predictors of clinical outcomes such as the presence of a specialist staff in the ward (proportion: 0.25), and an improved likelihood of better patient recovery rates (direction: higher proportion with increased specialist staffing). This study validates the effectiveness of multilevel regression models for assessing clinical performance at district hospitals, providing insights into resource allocation and quality improvement. District hospital managers should prioritise hiring specialists to enhance patient care outcomes. Further research is recommended to explore additional factors impacting health outcomes. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Multilevel modelling, Rwanda, District health systems, Hierarchical analysis, Quantitative methods, Geographic information systems, Spatial analysis*

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