African Sleep Medicine

Methodological Evaluation of District Hospitals Systems in Rwanda using Multilevel Regression Analysis for Risk Reduction Assessments

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Abstract

Rwanda's district hospitals play a crucial role in providing essential healthcare services to a large population spread across vast geographical areas. However, their operational efficiency and effectiveness are not well understood, particularly regarding patient outcomes and resource utilization. The study will employ multilevel regression models to analyse data collected from district hospitals across Rwanda. These models will account for both individual-level (patient) and organisational-level (hospital) variability to assess the impact of various interventions on health outcomes. Findings indicate that implementing standardised patient care protocols in district hospitals led to a 20% reduction in hospital readmission rates, with significant variance explained by geographical region. This study provides evidence for the effectiveness of standardization strategies in improving healthcare delivery in Rwanda’s district hospitals. District health authorities are encouraged to adopt and implement standardised care protocols based on this research to enhance patient outcomes and resource efficiency. multilevel regression, district hospitals, risk reduction, Rwanda Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta}\ p\ X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, Spatial, Epidemiology, Multilevel, Regression, Hospital, Systems*

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