



Evaluating District Hospitals Systems in Rwanda through Multilevel Regression Analysis: A Methodological Assessment of Yield Improvement

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Abstract

Rwanda's district hospitals face challenges in delivering effective healthcare services, necessitating a methodological evaluation of their systems. A multilevel regression model was applied to evaluate the impact of various factors on service delivery outcomes at the district level, accounting for hierarchical data structures within and between hospitals. The multilevel regression analysis revealed that investment in human resources (HR) had a significant positive effect on patient care quality, with an estimated increase in yield by 15% after adjusting for other variables. This study underscores the importance of HR investments in enhancing service delivery effectiveness within Rwanda's district hospital systems. District health authorities should prioritise human resource development to improve healthcare services and patient outcomes. multilevel regression, yield improvement, district hospitals, Rwanda 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: Rwanda, District Hospitals, Multilevel Modelling, Regression Analysis, Health Services Delivery, Outcome Evaluation, Quality Improvement

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