



Multilevel Regression Analysis of District Hospitals Systems in Uganda: Methodological Evaluation and Reliability Assessment

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Abstract

District hospitals in Uganda play a critical role in healthcare delivery, particularly in underserved regions. However, their reliability and performance have not been rigorously evaluated. A longitudinal study design was employed, collecting data from multiple districts over several years. Multilevel mixed-effects logistic regression models were used to analyse the hierarchical structure of the data. The initial phase revealed a significant difference in patient outcomes between hospitals with better management practices and those without (OR = 1.52; CI: 1.03-2.26). This study provides robust evidence on the importance of managerial interventions for improving healthcare delivery. Policy makers should prioritise training programmes to enhance hospital managers' skills and resources, thereby ensuring consistent quality of care across districts. District Hospitals, Multilevel Regression, Reliability Assessment, Healthcare Delivery

Keywords: *District hospitals, Multilevel regression, Reliability assessment, Hierarchical analysis, Quantitative methods, Community health systems, Spatial clustering*

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