



Methodological Evaluation of District Hospitals Systems in Tanzania Using Multilevel Regression Analysis for Clinical Outcomes Measurement

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Abstract

District hospitals in Tanzania play a critical role in healthcare delivery but often face challenges in providing consistent quality of care. A methodological evaluation is needed to assess these systems and improve clinical outcomes. Multilevel regression analysis was employed to examine the relationship between hospital-level factors and patient clinical outcomes. Data from three districts were analysed over two years. The multilevel model revealed significant district-specific variations in patient recovery rates, with some hospitals showing improvement while others faced persistent challenges. Our findings suggest that targeted interventions are needed to enhance the performance of district hospitals in Tanzania. The multilevel regression approach provides a robust framework for future research and policy formulation. District health authorities should prioritise quality assurance programmes, staff training, and resource allocation strategies to improve clinical outcomes. district hospitals, Tanzania, clinical outcomes, multilevel regression analysis Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, District health systems, Multilevel modelling, Clinical outcomes assessment, Quantitative methods, Regression analysis, Health service evaluation*

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