



Multilevel Regression Analysis to Evaluate Clinical Outcomes in Emergency Care Units Across Tanzania

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Abstract

Background information on emergency care units in Tanzania is limited, with variability across different regions. A multilevel regression model was employed to analyse data from multiple emergency care units. The model accounts for both unit-level (e.g., staffing, infrastructure) and patient-level factors affecting clinical outcomes. The multilevel regression analysis revealed that the proportion of patients receiving timely interventions varied significantly by level of care within regions, with a notable difference in intervention rates between Level 1 and Level 4 units (60% vs. 35%, $p < 0.05$). The multilevel regression analysis provided insights into the effectiveness of emergency care systems across Tanzania. Recommendation for enhancing patient outcomes includes improving infrastructure in lower-level units and increasing training opportunities for healthcare providers. 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: Sub-Saharan, regression, multilevel, stratification, healthcare, evaluation, outcomes

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