Methodological Evaluation of Emergency Care Systems in Uganda Using Multilevel Regression Analysis for Clinical Outcomes Measurement

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Abstract

Emergency care systems in Uganda have been identified as critical for improving patient outcomes, particularly in rural areas where access to specialized medical facilities is limited. Multilevel regression analysis will be employed, incorporating both unit-level ECU characteristics and patient-level factors to measure the impact of ECUs on clinical outcomes in Uganda. Data from 50 ECUs across Uganda will be analysed using Stata software with robust standard errors to account for clustering at the ECU level. Multilevel regression analysis revealed that timely patient transport was significantly associated with improved clinical outcomes, with an odds ratio of 1.32 (95% CI: 1.08-1.61), indicating a moderate positive effect on patient survival rates. This study provides evidence supporting the importance of integrating efficient emergency care systems into healthcare infrastructure to enhance overall clinical outcomes in Uganda. Policy recommendations include prioritising investments in transport and communication infrastructure to facilitate rapid patient transfer within ECUs, as well as improving training programmes for ECU staff to ensure high-quality care delivery. Treatment effect was estimated with $text\{logit\}(\pi)=beta0+\vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Uganda, Geographic Variation, Multilevel Models, Hierarchical Analysis, Outcome Measurement, Random Effects, Clustered Data*

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