African Health and Development Linkages (Interdisciplinary -

Methodological Evaluation of Emergency Care Units Systems in Nigeria Using Multilevel Regression Analysis to Measure Clinical Outcomes

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Abstract

Emergency care units (ECUs) in Nigeria are critical for managing acute health emergencies. However, their performance varies significantly across different regions and facilities. Multilevel regression analysis was employed to assess the impact of various factors at both individual and organisational levels on clinical outcomes. Data from multiple ECU facilities were analysed to ensure robustness and generalizability. The multilevel model indicated that the presence of adequate medical supplies ($p<0.05$) had a significant positive effect on patient survival rates, with an estimated increase in survival rate by 12% for each unit improvement in supply availability. This study provides insights into how system-level interventions can improve clinical outcomes in Nigerian ECU facilities. Facility managers and policymakers should prioritise investment in medical supplies to enhance the effectiveness of emergency care units. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Nigerian, multilevel, regression, stratification, health-systems, outcomes, geography*

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