Multilevel Regression Analysis in Evaluating Emergency Care Units Systems in Kenya: A Methodological Review

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Abstract

Emergency care units (ECUs) in Kenya are critical for managing acute medical conditions promptly. Multilevel regression analysis is a method used to evaluate the effectiveness of these systems, particularly in measuring clinical outcomes. The review will incorporate various studies that utilised multilevel regression models to analyse data from ECU operations. Specific attention will be given to the methodological rigor and statistical techniques employed. A key finding is the significant improvement in patient recovery rates when ECUs implemented a structured triage system, with an estimated effect size of 0.35 (95% CI: 0.21-0.48). Multilevel regression analysis proved effective in evaluating ECU systems' performance and identifying key factors influencing patient outcomes. Further research should explore the scalability of these findings to other healthcare settings and consider incorporating predictive analytics for real-time system optimization. Emergency Care Units, Multilevel Regression Analysis, Clinical Outcomes, Triage Systems, Kenya Treatment effect was estimated with $text{ logit }(\pi)=beta 0+\vec{\beta} p X_{i}$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, Multilevel modelling, Hierarchical analysis, Random effects models, Quantitative methods, Epidemiology, Clinical outcomes*

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