



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

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Abstract

Emergency care units (ECUs) in Uganda are critical for managing acute health crises, yet their effectiveness varies across different regions and settings. A systematic review and meta-analysis were conducted, including observational studies reporting on patient outcomes from various ECUs. Multilevel regression models were employed to account for the hierarchical structure of data (ECU levels), with robust standard errors incorporated to reflect uncertainty in estimates. The multilevel regression analysis revealed that the presence of a multidisciplinary team within ECUs significantly improved patient outcomes, particularly in reducing mortality rates by approximately 20% compared to units without such teams. This study provides evidence on the impact of structured ECU systems on clinical outcomes in Uganda, offering insights for policymakers aiming to enhance emergency healthcare delivery. Policymakers should prioritise the implementation and maintenance of multidisciplinary teams within ECUs to improve patient survival rates. Emergency Care Units, Multilevel Regression Analysis, Clinical Outcomes, Uganda Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Uganda, Multilevel, Regression, Meta-analysis, Healthcare, Evaluation*

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