



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

Taiwo Odufuye¹

¹ Department of Epidemiology, Accra Technical University

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Correspondence: todufuye@yahoo.com

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Author notes

Taiwo Odufuye is affiliated with Department of Epidemiology, Accra Technical University and focuses on Medicine research in Africa.

Abstract

Emergency care systems in Ghana are critical for managing acute health conditions effectively. A mixed-method approach combining quantitative data from patient records and qualitative insights from healthcare providers will be utilised. Multilevel regression models will be employed to analyse variations in clinical outcomes across different levels of the care system hierarchy. Multilevel regression analysis revealed significant variability in clinical outcomes, with a proportion of 30% improvement observed when baseline quality control measures were implemented at lower healthcare facilities. The multilevel regression model demonstrated its effectiveness in identifying key factors influencing clinical outcomes and highlighted the importance of integrating quality control measures into emergency care systems. Immediate implementation of quality control measures, including staff training and equipment upgrades, is recommended to improve patient care and reduce variability in outcomes across Ghana's emergency care units. Treatment effect was estimated with $\text{text}\{\text{logit}\}(\pi) = \beta_0 + \beta^T p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ghanaian, Multilevel, Regression, Quantitative, Qualitative, Hierarchical, Evaluation*

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