African Sport Psychology (Clinical/Applied)

Bayesian Hierarchical Model Assessment of Clinical Outcomes in Emergency Care Units across Senegal

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Abstract

Emergency care units in Senegal have been identified as critical for improving patient outcomes. However, variability in their performance across different regions necessitates a methodological evaluation to assess clinical effectiveness. A Bayesian hierarchical model was employed to analyse clinical data from multiple emergency care units. This approach allows for the incorporation of regional variability while providing robust estimates of treatment effectiveness. The analysis revealed significant heterogeneity in clinical outcomes across regions, with one unit showing a 20% improvement rate over another, indicating potential areas for intervention and optimization. This study underscores the importance of a standardised approach to evaluating emergency care units, particularly highlighting the need for tailored interventions based on regional data. Based on this research, it is recommended that further studies be conducted with larger sample sizes and diverse regions to validate these findings and inform policy decisions. Bayesian Hierarchical Model, Emergency Care Units, Clinical Outcomes, Senegal 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, Bayesian Hierarchical Models, Clinical Outcomes Assessment, Epidemiology, Geographic Variation, Methodological Evaluation, Senegal*