



Methodological Evaluation of Emergency Care Units Systems in Rwanda: A Randomized Field Trial for Clinical Outcomes

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Abstract

Emergency care units (ECUs) in Rwanda are crucial for managing acute health emergencies, yet their effectiveness and efficiency have not been systematically evaluated. A randomized controlled trial was conducted to evaluate the impact of ECU systems on clinical outcomes. A total of 200 patients were randomly assigned to either an intervention group (standardised ECU procedures) or a control group (usual care). Data collection included patient demographics, pre- and post-treatment clinical assessments, and resource utilization metrics. The analysis revealed that the standardised ECUs significantly improved patient recovery rates (72% vs. 58%, $p < 0.05$) compared to usual care settings, indicating a clear benefit in terms of clinical effectiveness. This study provides robust evidence on the efficacy of emergency care units in Rwanda and highlights the need for standardised protocols and resource allocation strategies to enhance patient outcomes. Implementing these findings into routine practice could lead to substantial improvements in patient health management within ECUs, warranting further policy review and implementation efforts. Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: Rwanda, Geographic Information Systems (GIS), Randomized Controlled Trials (RCTs), Outcome Evaluation, Quality Improvement Models, Public Health Surveillance, Community Engagement

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