African Bioethics (Interdisciplinary - Philosophy/Medical/Law/Social)

# Methodological Evaluation of Community Health Centre Systems in Rwanda Using Quasi-Experimental Design to Assess System Reliability

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## Abstract

Community health centres (CHCs) play a crucial role in Rwanda's healthcare system, aiming to provide accessible and equitable services. However, their reliability and effectiveness require methodological evaluation. A mixed-methods approach combining quantitative data from CHCs' electronic health records (EHR) and qualitative interviews with stakeholders. A difference-in-differences (DiD) model was employed to assess system reliability over time. CHC patient flow improved by 15% after implementing new appointment scheduling software, while resource allocation efficiency showed a 20% increase in outpatient visits per staff member. The quasi-experimental design successfully highlighted improvements in CHC systems' operational metrics, providing evidence for system reliability enhancements. Further studies should explore the long-term impacts and scalability of these interventions across different regions in Rwanda. Community Health Centres, Quasi-Experimental Design, System Reliability, Difference-in-Differences (DiD), Healthcare Access 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, community health centres, quasi-experimental design, service reliability, system evaluation, intervention studies, public health methodologies*

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