African Disability Studies (Interdisciplinary - Social/Health/Policy)

# Methodological Evaluation of Community Health Centre Systems in Uganda Using Multilevel Regression Analysis for System Reliability Assessment

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## Abstract

Community health centers (CHCs) in Uganda are pivotal for delivering healthcare services to underserved populations. However, their reliability and effectiveness vary significantly across different regions. A multilevel regression model was employed to analyse data from multiple CHCs nested within various districts. The model accounts for both individual-level and district-level variables influencing health outcomes. In a sample of CHCs, we observed that the presence of qualified healthcare providers significantly improved service delivery quality ($p < .05$), while infrastructure deficiencies were associated with lower patient satisfaction scores ($r = -0.32$). The multilevel regression analysis provided insights into the key factors affecting CHC reliability and could inform policy decisions aimed at enhancing health services in Uganda. Policy makers should prioritise training programmes for healthcare professionals and infrastructure improvements to enhance service quality and patient satisfaction within CHCs.

**Keywords:** *African geography, community health centers, multilevel modelling, reliability assessment, statistical methods, regression analysis, geographical variation*

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