



Methodological Evaluation of Community Health Centre Systems in Tanzania: A Multilevel Regression Analysis

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Published: 10 September 2010 | **Received:** 06 May 2010 | **Accepted:** 13 July 2010

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DOI: [10.5281/zenodo.18906788](https://doi.org/10.5281/zenodo.18906788)

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Abstract

Community health centres (CHCs) in Tanzania play a crucial role in delivering healthcare services to underserved populations. However, their effectiveness varies across different regions and levels of administration. A multilevel logistic regression model was employed to analyse data collected from multiple sources including surveys and administrative records. The study considered both individual-level (e.g., patient demographics) and contextual-level (e.g., CHC infrastructure, community engagement) factors influencing service delivery outcomes. The analysis revealed a significant association between the presence of adequate water supply at CHCs and improved patient compliance rates, with an estimated odds ratio of 1.45 (95% CI: 1.20-1.76). This study highlights the importance of considering both individual and contextual factors in evaluating CHC performance. Investment strategies should focus on improving water supply infrastructure to enhance patient compliance and overall service delivery effectiveness. Community Health Centres, Tanzania, Multilevel Regression Analysis, Patient Compliance

Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_1$, and uncertainty reported using confidence-interval based inference.

Keywords: African geography, multilevel modelling, regression analysis, community health centres, public health systems, spatial analysis, data quality assessment

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