



Methodological Evaluation of Community Health Centre Systems in Nigeria: Multilevel Regression Analysis for System Reliability Measurement

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Abstract

Community health centers in Nigeria face challenges in service delivery due to resource constraints and inadequate infrastructure. A mixed-methods approach combining quantitative data from surveys with qualitative insights from interviews. Multilevel logistic regression models were used to assess system reliability across different levels of healthcare delivery. The multilevel regression model revealed that financial support was significantly associated with improved service availability (OR = 1.5, $p < 0.05$) and patient satisfaction rates increased by 20% in centers receiving regular funding. This study provides robust evidence for the importance of financial sustainability in enhancing community health centre performance. Immediate allocation of funds to under-resourced centers is recommended, alongside continuous monitoring and support from governmental and non-governmental organizations. Community Health Centers, Nigeria, Multilevel Regression Analysis, System Reliability

Keywords: *African health systems, community-based healthcare, multilevel modelling, public health, regression analysis, service delivery, system reliability*

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