African Medical Laboratory Immunology

Methodological Evaluation of Community Health Centres Systems in Rwanda Using Multilevel Regression Analysis for Risk Reduction: An Intervention Study

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Abstract

This study addresses a current research gap in Medicine concerning Methodological evaluation of community health centres systems in Rwanda: multilevel regression analysis for measuring risk reduction in Rwanda. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Methodological evaluation of community health centres systems in Rwanda: multilevel regression analysis for measuring risk reduction, Rwanda, Africa, Medicine, intervention study This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Rwanda, Geographic Information Systems (GIS), Community Health Centers, Multilevel Analysis, Regression Modelling, Spatial Statistics, Public Health Initiatives*

ABSTRACT-ONLY PUBLICATION

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