



Methodological Evaluation of Community Health Centre Systems in Tanzania Using Panel Data for Risk Reduction Measurement,

Kamali Mwakalila¹, Simba Sogoba², Mbilinyi Simiyu³

¹ Department of Public Health, Tanzania Wildlife Research Institute (TAWIRI)

² Department of Internal Medicine, Tanzania Wildlife Research Institute (TAWIRI)

³ Department of Epidemiology, Ardhi University, Dar es Salaam

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Correspondence: kmwakalila@aol.com

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Author notes

Kamali Mwakalila is affiliated with Department of Public Health, Tanzania Wildlife Research Institute (TAWIRI) and focuses on Medicine research in Africa.

Simba Sogoba is affiliated with Department of Internal Medicine, Tanzania Wildlife Research Institute (TAWIRI) and focuses on Medicine research in Africa.

Mbilinyi Simiyu is affiliated with Department of Epidemiology, Ardhi University, Dar es Salaam and focuses on Medicine research in Africa.

Abstract

Community health centres in Tanzania have been established to improve access to healthcare services. However, their effectiveness remains unclear. Panel data analysis was employed to assess the impact of interventions on patient outcomes over time. Robust standard errors were used to account for within-centre correlations. A significant proportion (75%) of patients showed reduced risk factors after attending community health centres, indicating a positive effect. The use of panel data significantly increased the precision and reliability of measuring risk reduction in healthcare settings. Continuous monitoring and periodic evaluations should be implemented to maintain optimal performance of community health centres. Treatment effect was estimated with $\text{text}\{ \text{logit} \}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African geography, community health centers, panel data analysis, randomized controlled trials, statistical methods, spatial econometrics, intervention studies*

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