African Veterinary Parasitology

Panel Data Estimation for Measuring Adoption Rates in Community Health Centre Systems in Kenya: A Methodological Evaluation

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Abstract

Community health centers (CHCs) play a crucial role in public health systems, particularly in resource-limited settings such as Kenya. The adoption rates of various interventions and services provided by CHCs are essential for evaluating their effectiveness and optimising resource allocation. Panel data from a sample of CHCs across Kenya were utilised, with time-series observations spanning two years to capture changes over time and cross-sectional comparisons to identify differences between centers. Econometric models such as fixed effects and random effects regression analysis were applied to estimate adoption rates while accounting for potential endogeneity issues. Panel data revealed a significant variation in intervention adoption rates, with some CHCs showing higher adoption levels compared to others. Regression analyses provided estimates of the impact of factors like funding availability, staff training, and community engagement on service uptake. The study demonstrated that panel data estimation is effective for measuring adoption rates in CHC systems, offering insights into which intervention strategies are most successful. The findings suggest a need for targeted interventions to improve service delivery across the network. Policy makers should consider implementing a comprehensive training programme and establishing clear guidelines on resource allocation to enhance the effectiveness of health services provided by CHCs. community health centers, panel data estimation, adoption rates, econometric models, Kenya Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African contexts, panel data analysis, health service utilization, methodological evaluation, quantitative methods, randomized controlled trials, service diffusion models*

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