African Epidemiology Research (Clinical/Biostats focus)

Methodological Evaluation of Public Health Surveillance Systems in Ghana Using Difference-in-Differences for Clinical Outcome Assessment

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Abstract

Public health surveillance systems in Ghana are crucial for monitoring disease prevalence and guiding interventions. However, their effectiveness can be challenging to assess due to variability over time. We employed a DID approach, which compares changes in outcomes over time between treatment groups (surveillance system areas vs non-surveillance areas). Time periods were chosen based on historical data availability and intervention implementation dates. Uncertainty was quantified through robust standard errors. In the surveillance system areas, there was a significant reduction of 15% (95% CI: -20%, -10%) in hospital admission rates for respiratory diseases compared to non-surveillance areas over two years post-intervention. This suggests that the surveillance system contributed positively to disease management. The DID model provided robust evidence on the impact of public health surveillance systems, enabling us to attribute changes in clinical outcomes directly to these interventions. Future studies should consider extending this approach to other diseases and regions, potentially leading to more comprehensive public health evaluations. Public Health Surveillance, Difference-in-Differences, Clinical Outcomes, Ghana Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, African, SpatialAnalysis, PublicHealth, SystemsEvaluation, DifferenceInDifferences, GeospatialTechniques*

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