African Virology Studies (Core Life Science)

Methodological Evaluation of Public Health Surveillance Systems in Rwanda Using Difference-in-Differences Model for Risk Reduction Measurement

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Abstract

Public health surveillance systems are essential for monitoring and controlling infectious diseases in Rwanda. However, there is a need to evaluate their effectiveness and identify areas for improvement. A comprehensive search strategy was employed across multiple databases including PubMed and Scopus. Studies published between and were included based on predefined inclusion criteria, which focused on surveillance system methodologies and DiD applications in Rwanda. The analysis revealed that while the DiD model has been applied to evaluate public health interventions, there is variability in its implementation across different studies. For instance, some studies reported a reduction in disease incidence of up to 30% when using the DiD approach. This review highlights the potential of the DiD model for evaluating risk reduction in Rwanda's surveillance systems but also underscores the importance of standardised methodologies and robust data collection processes. Future research should prioritise methodological consistency and ensure high-quality, up-to-date surveillance data to enhance the reliability of DiD-based assessments. Treatment effect was estimated with $text\{logit\}(\pi) = beta\,0 + \beta^{\rightarrow} p\, X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Rwanda, surveillance, methodology, econometrics, intervention, evaluation*

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