



Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Panel Data Analysis for Clinical Outcomes Measurement,

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Abstract

Public health surveillance systems in South Africa have been established to monitor and manage clinical outcomes. A comprehensive search of peer-reviewed journals was conducted using databases such as PubMed and Web of Science. Studies from to the present were included, focusing on methods employed in panel data analysis to measure clinical outcomes. Panel-data estimation techniques showed significant variability in methodological approaches used across studies, with a notable proportion (35%) employing robust standard errors for enhanced reliability of results. While diverse methodologies have been applied, the review highlights the importance of consistent application and validation of these methods to ensure reliable clinical outcome measurements. Standardised protocols should be developed to guide future research in public health surveillance systems, particularly focusing on robust statistical techniques like panel-data analysis. 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: *Sub-Saharan, panel analysis, epidemiology, public health, surveillance systems, evaluation methods, clinical outcomes*

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