



Methodological Assessment of Public Health Surveillance Systems in South Africa Using Quasi-Experimental Designs: A Review

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Abstract

Public health surveillance systems in South Africa play a crucial role in monitoring diseases and outbreaks to protect public health. However, their effectiveness is often debated due to methodological limitations. A comprehensive search strategy was employed across multiple databases including PubMed and Web of Science. Studies were selected based on predefined inclusion criteria related to quasi-experimental design applications in public health surveillance system evaluations in South Africa. The review identified a significant proportion (70%) of studies using intention-to-treat analysis, which is important for understanding the real-world impact but may not fully capture treatment effects. This review highlights the need for more consistent application and reporting of quasi-experimental design methodologies in public health surveillance system evaluations to improve cost-effectiveness assessments. Future research should prioritise standardising methodological approaches, including use of intention-to-treat analysis and robust statistical models, to enhance the validity and reliability of cost-effectiveness analyses. Treatment effect was estimated with $\text{text}\{logit\}(\pi) = \beta_0 + \beta^{-1} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, surveillance, methodology, evaluation, effectiveness, quasi-experimental, randomized*

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