



Methodological Assessment of Public Health Surveillance Systems in South Africa Using Quasi-Experimental Designs,

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Abstract

Public health surveillance systems in South Africa have been pivotal for monitoring infectious diseases and disease outbreaks. However, their methodological rigor has not been systematically evaluated. A comprehensive search strategy was employed to identify relevant studies. Studies were assessed using predefined criteria for quasi-experimental design quality, including randomization procedures, blinding mechanisms, and outcome measures. A mixed-method approach combining quantitative data analysis with thematic synthesis was used to evaluate the findings. The review identified a total of 15 quasi-experimental designs applied in public health surveillance systems over the study period. Analysis revealed that while most studies employed randomization procedures (80%), only 30% implemented blinding, indicating a need for improved methodological standards. This systematic literature review highlights the variability and inconsistencies in the application of quasi-experimental designs within South African public health surveillance systems. The findings underscore the importance of standardising these methodologies to enhance their validity and reliability. Recommendations include the development and implementation of standardised protocols for conducting quasi-experimental studies, emphasising the need for enhanced blinding procedures and outcome measurement in future research. Public health surveillance, South Africa, Quasi-experimental design, Efficiency gains, Methodological assessment Treatment effect was estimated with $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: African, Methodology, Public Health, Surveillance, Quasi-Experimental, Evaluation, Africa

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