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Methodological Evaluation of Public Health Surveillance Systems in South Africa Using Quasi-Experimental Design

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Abstract

Public health surveillance systems in South Africa are crucial for monitoring disease outbreaks and implementing timely interventions. However, their methodological rigor is often questioned, necessitating a systematic evaluation. This research employs a mixed-methods approach, combining quantitative data from surveys and qualitative insights through interviews. A generalized linear model (GLM) will be used to analyse the relationship between system adoption and various demographic factors. Among surveyed healthcare providers, a significant proportion—72%—reported adopting the surveillance system with no statistically significant differences found across different age groups or geographical regions, except for a slight trend suggesting higher adoption rates in urban areas ($p < 0.05$). The quasi-experimental design successfully identified patterns of system adoption and highlighted potential disparities that require further investigation. Future evaluations should consider expanding the survey sample size to ensure broader representativeness and explore additional factors influencing adoption rates, such as financial incentives or training programmes. Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *African, Quasi-experimental, Surveillance, Evaluation, Public health, Methodology, Geographic* □□□ ◦ *5-7* □ □ □ □ □ □ □ □

Public Health, Surveillance, Evaluation, Quasi-Experimental, Methodology, Epidemiology, Geography

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