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Methodological Evaluation of Public Health Surveillance Systems in Senegal: A Randomized Field Trial Approach

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Abstract

Public health surveillance systems are critical for monitoring disease prevalence and guiding interventions in Senegal. However, their effectiveness varies widely across regions and can be improved through methodological refinements. A systematic literature review was conducted, including studies published between and . Studies were selected based on their methodology, data collection methods, and geographic coverage in Senegal. The analysis employed a mixed-methods approach combining quantitative and qualitative data. The findings indicate that while most surveillance systems in Senegal employ periodic surveys, there is significant variability in the sampling strategies used. For example, one study reported an 18% improvement in disease detection rates when stratified sampling was implemented compared to random sampling. This review highlights the importance of adopting more rigorous and tailored methodologies for improving the accuracy and efficiency of public health surveillance systems in Senegal. The adoption of a randomized field trial approach is recommended as a methodological improvement. Furthermore, training programmes should be established to enhance data collection techniques among local health workers. 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, Geographic Variation, Sampling Theory, Surveillance Systems, Randomized Controlled Trials, Impact Evaluation, Data Quality Assurance*

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