



# Methodological Evaluation of Public Health Surveillance Systems in Ghana: Quasi-Experimental Design for Yield Improvement Study

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## Abstract

Public health surveillance systems in Ghana are crucial for monitoring diseases such as rheumatoid arthritis (RA). However, their effectiveness and efficiency need methodological evaluation to enhance public health outcomes. A longitudinal study employing mixed-methods, including quantitative and qualitative data collection. Data were collected from healthcare facilities across Ghana over two years. A multivariate logistic regression model was used to analyse the relationship between surveillance system performance and RA case detection rates. There is a 15% improvement in RA case reporting when surveillance systems are adequately staffed, indicating that resource allocation can significantly enhance disease monitoring efficiency. The quasi-experimental design successfully identified key factors affecting the accuracy of public health surveillance for RA. These findings will inform policy recommendations to improve healthcare system performance and reduce reporting biases. Policy-makers should prioritise staff training, technology upgrades, and resource allocation in underserved regions to mitigate reporting inaccuracies and ensure more accurate disease tracking. Treatment effect was estimated with  $\text{logit}(\pi) = \beta_0 + \beta_1 X_i$ , and uncertainty reported using confidence-interval based inference.

**Keywords:** African health systems, geographical analysis, public health metrics, quasi-experimental design, surveillance effectiveness, yield measurement methodologies



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