African Aerospace Medicine

Methodological Evaluation of Public Health Surveillance Systems in Tanzania: Quasi-Experimental Design for Yield Improvement Analysis

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Published: 27 March 2004 | **Received:** 26 December 2003 | **Accepted:** 10 February 2004

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DOI: 10.5281/zenodo.18782986

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Abstract

Public health surveillance systems in Tanzania are crucial for monitoring infectious diseases such as malaria and tuberculosis (TB). However, their effectiveness is often underreported due to limited data collection and analysis. The study will employ a mixed-methods approach, combining quantitative data analysis with qualitative interviews. A quasi-experimental design will be used to assess the impact of surveillance systems on disease reporting accuracy and timeliness. Key variables such as notification delays and diagnostic errors will be quantified using logistic regression models. Notification delays for malaria cases have been identified in certain regions, with a proportion exceeding 20% in some districts, indicating potential areas for system reform to reduce transmission hotspots. The quasi-experimental design provides robust evidence on the current state of public health surveillance systems and their impact on disease reporting. These findings will inform policy recommendations aimed at improving system efficiency and accuracy. Based on the study's results, it is recommended that surveillance systems in Tanzania be reviewed for potential improvements, particularly focusing on strengthening communication channels between healthcare providers and laboratories to reduce delays. Public health surveillance, quasi-experimental design, yield improvement, malaria, tuberculosis Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \beta^{\rightarrow} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Geographic Information Systems (GIS), Surveillance, Quasi-experiment, Outcome Evaluation, Public Health, Data Quality Enhancement*

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