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Methodological Evaluation of Public Health Surveillance Systems in Tanzania: Quasi-Experimental Design for Risk Reduction Assessment

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Abstract

Public health surveillance systems in Tanzania are crucial for monitoring and responding to infectious diseases. Current systems face challenges in timely data collection and analysis. A mixed-methods approach combining quantitative and qualitative data was employed. Data from 10 public health clinics were analysed for trends over two years, supplemented by interviews with healthcare workers to understand system performance and challenges. Interviews revealed that the systems often struggle with timely reporting of outbreaks (mean delay: 4 weeks), which could be mitigated through improved communication channels and training among staff. Data analysis showed a significant reduction in reported cases post-intervention ($p < 0.05$). The quasi-experimental design successfully identified key areas for improvement, particularly in communication and staff training. Immediate improvements should include enhancing communication protocols and providing additional training to healthcare workers. Public Health Surveillance, Tanzania, Quasi-Experimental Design, Risk Reduction Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Tanzania, Geographic Information Systems, Qualitative Research, Quantitative Analysis, Surveillance, Epidemiology, Sampling Techniques*

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