African Nanopharmacology and Delivery (Applied aspect)

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

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Abstract

Public health surveillance systems are critical for monitoring disease outbreaks and ensuring timely interventions in Ethiopia's diverse healthcare landscape. A mixed-method approach combining quantitative data analysis with qualitative interviews was employed to assess the efficacy of existing surveillance mechanisms. Randomized field trials were conducted in two regions, with systematic reviews of surveillance logs and structured questionnaires administered to health workers. The randomized field trial revealed a significant improvement ($p < 0.05$) in data accuracy for disease reporting compared to baseline assessments, indicating potential gains from standardised protocols. Enhanced surveillance systems have the potential to improve public health outcomes by facilitating quicker and more accurate responses to health crises. Standardise training programmes for health workers on consistent data collection methods and integrate feedback mechanisms into system design to foster continuous improvement. Public Health Surveillance, Randomized Field Trial, Efficiency Gains, Data Accuracy Treatment effect was estimated with $text\{logit\}(\pi) = beta 0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Ethiopia, Geographic Information Systems, Surveillance, Quality Improvement, Randomized Controlled Trials, Public Health Metrics, Data Collection Techniques*

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