African Plant Breeding and Genetics (Agri/Plant Science)

Methodological Evaluation of Public Health Surveillance Systems in Ethiopia Using Multilevel Regression Analysis for System Reliability Measures

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Abstract

Public health surveillance systems in Ethiopia are essential for monitoring infectious diseases and controlling epidemics efficiently. A systematic literature review was conducted using rigorous inclusion criteria to identify relevant studies. Multilevel regression analysis was applied to assess the reliability and validity of surveillance data. Multilevel regression analysis revealed that factors such as geographical distribution and healthcare infrastructure significantly influenced the accuracy of disease reporting across different levels of the health system. The study highlights the importance of multilevel regression for evaluating public health surveillance systems, providing a robust framework for future research in Ethiopia. Public health officials should implement standardised protocols and enhance data collection infrastructure to improve system reliability. public health surveillance, multilevel regression, reliability, Ethiopia Treatment effect was estimated with $text\{logit\}(\pi) = beta0 + \vec{\beta} p X_i$, and uncertainty reported using confidence-interval based inference.

Keywords: *Sub-Saharan, Ethiopia, Public Health Surveillance, Multilevel Analysis, Systematic Review, Methodology, Reliability Measures*