



Reliability Assessment of Public Health Surveillance Systems in Ghana Using Multilevel Regression Analysis

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Abstract

Public health surveillance systems are essential for monitoring infectious diseases and other public health threats in Ghana. Multilevel regression analysis was used to assess system reliability across different levels of data collection, including local and central government agencies. A positive correlation between timely reporting rates and disease outbreak containment effectiveness was observed, indicating that efficient systems can significantly reduce the spread of diseases ($r = 0.75$, $p < 0.01$). The study highlights the importance of continuous system improvement to enhance reliability. Regular training for surveillance staff and investment in technology infrastructure are recommended to improve public health surveillance systems in Ghana. Multilevel regression, Public Health Surveillance, System Reliability, Ghana

Keywords: *Sub-Saharan, Ghanaian, multilevel, regression, evaluation, surveillance, methodology*

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