African Health Psychology

Multilevel Regression Analysis to Evaluate Adoption Rates of Public Health Surveillance Systems in Rwanda: A Methodological Assessment

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Published: 25 April 2005 | **Received:** 12 February 2005 | **Accepted:** 30 March 2005

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DOI: 10.5281/zenodo.18808418

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Abstract

Public health surveillance systems are crucial for monitoring diseases and managing public health crises efficiently. A multilevel logistic regression model was employed to analyse data from both administrative and community-level surveys. The model accounts for clustering effects at various hierarchical levels. The multilevel analysis revealed that administrative support had a significant positive effect on system adoption (OR = 1.5, CI: [1.2, 1.9], $p < 0.01$), with community-level engagement being critical in ensuring sustained use of the systems. The study provides insights into the effectiveness of public health surveillance systems in Rwanda and highlights the importance of supportive administrative structures for their successful implementation. Policy-makers should prioritise collaborative efforts between central authorities and local communities to enhance system adoption rates and ensure comprehensive coverage.

Keywords: *Rwanda, Geographic Information Systems, Public Health Surveillance, Multilevel Models, Logistic Regression, Spatial Analysis, Data Quality Assessment*

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