

## Development of Geo-computational Model for Analysis of Lassa Fever Dynamics and Lassa Fever Outbreak Prediction

**Authors :** Adekunle Taiwo Adenike, I. K. Ogundoyin

**Abstract :** Lassa fever is a neglected tropical virus that has become a significant public health issue in Nigeria, with the country having the greatest burden in Africa. This paper presents a Geo-Computational Model for Analysis and Prediction of Lassa Fever Dynamics and Outbreaks in Nigeria. The model investigates the dynamics of the virus with respect to environmental factors and human populations. It confirms the role of the rodent host in virus transmission and identifies how climate and human population are affected. The proposed methodology is carried out on a Linux operating system using the OSGeoLive virtual machine for geographical computing, which serves as a base for spatial ecology computing. The model design uses Unified Modeling Language (UML), and the performance evaluation uses machine learning algorithms such as random forest, fuzzy logic, and neural networks. The study aims to contribute to the control of Lassa fever, which is achievable through the combined efforts of public health professionals and geocomputational and machine learning tools. The research findings will potentially be more readily accepted and utilized by decision-makers for the attainment of Lassa fever elimination.

**Keywords :** geo-computational model, lassa fever dynamics, lassa fever, outbreak prediction, nigeria

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