



Influence of Meteorological and Socioeconomic Factors on the spatio-temporal Variability of Cholera Incidence and Mortality in Nigeria

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Nigeria has a burden of climate sensitive diseases, one of the most important of these diseases that pose as a threat to public health because of its fatality and endemic nature is cholera.

This study investigate the influences of meteorological and socioeconomic factors on the spatio-temporal variability of cholera morbidity and mortality in Nigeria.

Several linear regression models were fit for individual states in the country and as well for three groups of states classified depending on annual precipitation amount. A stepwise multivariate regression model was used to estimate the influence of the year-to-year variations of cholera cases and deaths. Specifically, meteorological variables such as rain, maximum and minimum temperatures were analysed with annual aggregate count of cholera cases and deaths, taking into account of the socioeconomic factors that are potentially enhancing vulnerability such as: absolute poverty, adult literacy, access to pipe borne water and population density.

Results reveal that the most important explanatory meteorological and socioeconomic variables in explaining the spatial and temporal variability of the disease incidence and mortality all over the country are annual seasonal rain, annual mean maximum temperature, absolute poverty, and accessibility to pipe borne water. However, the influences of socioeconomic factors are more pronounced in the northern part of the country, and vice-versa in the case of meteorological factors. Improvement in the socioeconomic factors considered in this study will help reduce vulnerability, and thereby lower the risk of contracting the disease. Also, cross validated models output suggests a strong possibility of disease prediction, which will help authorities to put effective control measures in place which depend on prevention, and or efficient response.