Sensitivity analysis for the mathematical modelling of Monkey Pox Virus incorporating quarantine and public enlightenment campaign

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In this paper sensitivity analysis was carried out for the mathematical modeling of Monkey pox virus incorporating quarantine and public enlightenment campaign into the human population. The model was formulated using first order ordinary differential equations. The model equation was divided into two populations of human and rodents. There are two equilibrium points that exist in the model; Disease Free Equilibrium (DFE) and Endemic Equilibrium (EE). The Local and Global stabilities of Disease Free Equilibrium (DFE) were analyzed. The basic reproduction numbers of human to human and rodent to rodent transmission was computed. The sensitivity analysis of the Basic reproduction number with the parameters was carried out. The Disease Free Equilibrium (DFE) is locally and globally asymptotically stable if. The graphical presentation of the Basic reproduction number and the sensitive parameters shows that effective progression rate from infected class to Quarantine and effective public enlightenment campaign are the most sensitive parameters that will eradicate the disease from the population.

Keywords: Sensitivity analysis; monkey pox; equilibrium; reproduction number; public enlightenment campaign; quarantine.