

Abstract

In the current study, a nonlinear mathematical model was constructed to analyze variation in dispersion as well as control of the Covid-19 outbreak. The proposed SEAIHR model is expanded to include an additional class of isolation as a control strategy to restrict the transmission of disease. The reproduction number R_0 is evaluated by using the Next Generation technique as well as the model's local and global stability at both equilibrium points was analyzed. Following that, sensitivity analysis and some significant numerical simulations are studied. We used Pontryagin's Maximum Principle as a control approach to formulate an optimal control problem with the goal of reducing a cost functional for disease control. Finally, some Matlab-based graphical results are shown with illustrations.