

عنوان مقاله:

A numerical investigation for the COVID-19 spatiotemporal lockdown-vaccination model

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خلاصه مقاله:

The present article investigates a numerical analysis of COVID-19 (temporal and spatio-tempora) lockdown-vaccination models. The proposed models consist of six nonlinear ordinary differential equations as a temporal model and six nonlinear partial differential equations as a spatio-temporal model. The evaluation of reproduction number is a forecast spread of the COVID-19 pandemic. Sensitivity analysis is used to emphasize the importance of pandemic parameters. We show the stability regions of the disease-free equilibrium point and pandemic equilibrium point. We use effective methods such as central finite difference (CFD) and Runge-Kutta of fifth order (RK-5). We apply Von-Neumann stability and consistency of the numerical scheme for the spatio-temporal model. We examine and compare the numerical results of the proposed models under various parameters

کلمات کلیدی:

COVID-19 mathematical model, Reproduction number, Sensitivity analysis, Central finite method, Runge Kutta of fifth order method, Von-Neumann stability

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