

A MATHEMATICAL MODEL FOR COVID-19 TRANSMISSION IN SRI LANKA

W.M.E.S. Wijesinghe*, M.T.M. Dewasurendra and M.R. Winslow

Department of Mathematics, Faculty of Science, University of Peradeniya, Peradeniya, Sri Lanka
**emashas@sci.pdn.ac.lk*

In this study, the SEIR epidemiology model for the spread of COVID 19, introduced by Wickramaarachchi et al, was extended. The model was continued with a special focus on asymptomatic and symptomatic infected individuals, infected individuals in Intensive Care Units of hospitals, and patients who are assumed to be recovered, but not fully recovered (falsely tested). We have derived the system of ordinary differential equations and the basic reproduction number for the system to observe the transmission potential of the disease. Numerical simulations for the mathematical model were done for a period of one month by estimating parameters using MATLAB for the real-world data. The results indicate that the exposed and infected cases reach a maximum with a peak and decrease with time due to various prevention methods followed by society. Further, the basic reproduction number was calculated and discussed for the system along with numerical simulations.

Keywords: Asymptomatic individuals, Basic reproduction number, COVID-19 disease, Numerical simulations, Symptomatic individuals