Probability estimation of COVID-19 reinfection

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Background and Objective: COVID-19, an epidemic disease, caused by a novel coronavirus called SARS-COV2, significantly affected the whole world. The expeditious rise of corona cases has overpowered everything. Though the number of cases in some selected regions began to slow down after taking precautionary measures (quarantine, social distancing, vaccination), again due to easiness showed by the individuals in preventive measures, the second wave of corona has emerged. A large number of detecting kits and high sensitivity of rt PCR test, community health workers tested various individuals and recorded infectious and recovered ones. The objective of this study is to estimate the probability of COVID-19 reinfection with the help of mathematical equations in the recovered compartment of the system.

Method: A new SIRS model has been proposed with the help of differential equations, whose stability has been checked via Jacobian matrix, and reproduction number has also been calculated.

Results: Due to the avoidance of important preventive and precautionary measures by the people across the community, the cases accelerating erratically. The analytical results obtained by the numerical solutions revealed that the people who were recovered by either quarantine themselves or by synthetic/ chemical treatment/ vaccination can have a chance of reinfections came out to be 1.03.

Conclusion: As there are chances of being reinfected, it's important to get vaccinated and follow all the precautionary measures required to combat COVID-19 infection.

Recent Publications

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6. Khurana, Pooja, Deepak Kumar, and Sanjeev Kumar. "A Differential Equation Model for Social Networks using internet." FIRMS's International Journal of Mathematical Science 1, no. 1 (2019): 24-30.

Biography

Pooja Khurana is a professional academician with strong analytical skills seeking the position of Associate professor and researcher focusing in Biomathematical modeling (epidemiological modeling). She has published multiple papers in the areas of biomathematics, social networking indexed in Scopus, Web of Science; presented various mathematical reports in conferences and seminars. She is an expert in applying mathematical principles to complex real-world problems and well-versed with mathematical software such as Mathematica, MATLAB. She is currently mentoring three scholar candidates and is skilled with applying the concepts of statistics, numerical analysis, and probability in building and simulation of mathematical models for improving healthcare.

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