ISSN - Print: 2277 – 1522; Online: 2277 – 3517

ORIGINAL RESEARCH ARTICLE

DOI: 10.26727/NJRCM.2020.9.1.001-005 Year: 2020 Vol: 9 Issue: 1. Jan.-Mar. Page: 001-05

A Preliminary Prediction of Covid-19 Cases in India by April 2020 Using Exponential Mathematical Modelling

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Date of Submission	: 26.03.2020	Date of online Publication	: 31-03-2020
Date of Acceptance	: 30.03.2020	Date of Print Publication	: 31-03-2020

ABSTRACT

We are in the midst of covid-19 pandemic, the number of cases has exceeded 6,00,000 and continues to increase rapidly. India experienced Level 1 and 2 transmissions between January and March 2020. Consequently, a spike in the number of cases may be expected any time from now and if not well prepared for, is likely to overwhelm our healthcare service capacity. We aimed at developing a prediction algorithm for estimating the potential number of COVID-19 cases in India due to community transmission. This algorithm is based on the number of infections recorded in the initial days and further containment interventions like social distancing and complete lockdown. Exponential growth modeling is adapted to fit the data into the curve. 95% confidence interval depicts the precision of new cases daily. We modelled that the growth factor could be reduced due to the strict implementation of social distance and lockdown. 70% reduction in growth factor shows the flattening of the curve, a positive sign for the complete reduction of community spread. Further researchers can consider the impact of change in weather conditions (temperature and humidity) on virus transmission and virulence, increasing awareness for care-seeking among the general public, increasing provisions with outreach for testing in the Government and accredited centres, the country's young demography, population density, evolving herd immunity, and endemicity of other diseases (e.g., malaria and tuberculosis) vis-à-vis virus transmissibility and virulence of the SARS-CoV-2 in India.

Key word: Covid 19, Exponential fit, Growth factor, Lockdown, Social distance, India