Unfolding trends of COVID-19 transmission in India: Critical review of available Mathematical models

- Komal Shah Indian Institute of Public Health Gandhinagar, Gandhinagar
- Ashish Awasthi Public Health Foundation of India, Gurgaon https://orcid.org/0000-0002-9308-9782
- Bhavesh Modi GMERS Medical College, Gandhinagar, Gujarat
- Rashmi Kundapur K.S. Hegde Medical Academy, Nitte University, Mangalore
- Deepak Saxena Indian Institute of Public Health Gandhinagar, Gandhinagar https://orcid.org/0000-0003-0563-4259

Abstract

Background: There is a surge in epidemiological modeling research due to sudden onset of COVID-19 pandemic across the globe. In the absence of any pharmaceutical interventions to control the epidemic, nonpharmaceutical interventions like containment, mitigation and suppression are tried and tested partners in epidemiological theories. But policy and planning needs estimates of disease burden in various scenarios in absence of real data and epidemiological models helps to fill this gap. **Aims and Objectives**: To review the models of COVID-19 prediction in Indian scenario, critically evaluate the range, concepts, strength and limitations of these prediction models and its potential policy implications. **Results**: Though we conducted data search for last three months, it was found that the predictive models reporting from Indian context have started publishing very recently. Majority of the Indian models predicted COVID-19 spread, projected best-, worst case scenario and forecasted effect of various preventive measurements such as lockdown and social distancing. Though the models provided some of the critical information regarding spread of the disease and fatality rate associated with COVID-19, it should be used with caution due to severe data gaps, distinct socio-demographic profiling of the population and diverse statistics of co-morbid condition. **Conclusion**: Although the models were designed to predict COVID spread, and claimed to be accurate, significant data gaps and need for adjust confounding variables such as effect of lockdown, risk factors and adherence to social distancing should be considered before generalizing the findings. Results of epidemiological models should be considered as guiding beacon instead of final destination.

How to Cite