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Review Article

# A novel COVID-19 scenario amongs Indian population: An overview

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ABSTRACT

COVID-19 was declared as a pandemic by the world health organization (WHO) with substantial numbers of infected cases and deaths reported in many countries, with a high fatality rate that may reach 8%. The disease is caused by SARS-CoV-2 which is one of the coronaviruses. These viruses are common in animals with the potential of transmission to humans.



## 1. Introduction

COVID-19 was declared as a pandemic by the world health organization (WHO) with substantial numbers of infected cases and deaths reported in many countries, with a high fatality rate that may reach 8%. On January 8, 2020, a novel corona virus was officially announced as the causative pathogens of COVID-19 by the Chinese center for disease control and prevention. On January 30, 2020, the WHO announced that this outbreak had constituted a public health emergency of international concern. The novel corona virus was initially named 2019-nCOV and officially as severe acute respiratory syndrome-CoV-2(SARS-CoV-2). The COVID-19 virus is unique among human coronaviruses in its combination of high transmissibility, substantial fatal outcomes in some high-risk group and ability to causes huge social and economic disruption. COVID-19 fatality rate in India is probably the lowest in the world. Fatality rate in India, at 2.8% is much lower than Italy at 14.3% and its concurrent cumulative case fatality rate (CCCFR) to be much lower than that of any other countries.

## 2. Viral Etiology

According to recent research, SARS CoV-2 is zoonotic, similar to other betacoronaviruses like SARS CoV and middle east respiratory syndrome corona virus (MERS-CoV), with Chinese bat (Rhinocephalus Sinicus) being the most probable reservoir of the viruses[1] and pangolins as the most likely intermediate host.[2] The full-length genome sequence of the COVID-19 virus and other available genomes of Betacoronavirus showed the closet relationship with the bat SARS-like coronavirus strain Bat CoV RaTG13, which almost showed 96% identity.

## 3. Epidemiologic charecteristics

1. **Mode of transmission:** It appears that COVID-19 outbreak started with a single animal to human transmission, followed by constant human-to-human spread.[1] The main mode of transmissions among human-to-human occurs via respiratory droplets and contact transmission.[2]
2. **Source of transmission:** The main sources of transmission are being patients with symptomatic COVID-19, although a recent research suggested that asymptomatic patients and patients in their incubation period are also carriers of SARS-CoV-2. Therefore, its

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control is extremely challenging, because it is difficult to identify and quarantine these patients in time, which ultimately resulting into an accumulation of SARS-CoV2 in communities/general population.[2]

3. **Incubation period:** An estimated incubation period of COVID-19 has been suggested as 5 to 6 days an average, but there is evidence that it could be as long as 14 days, which is now commonly adopted duration for medical observation and quarantine of exposed person.[3]
4. **Fatality rate among Indian population:** The fatality rate is defined as cumulative death divided by cumulative cases. COVID-19 fatality rate in India is probably the lowest in the world. Fatality rate in India, at 2.8% is much lower than Italy at 14.3% and its concurrent cumulative case fatality rate (CCCFR) to be much lower than that of any other countries.

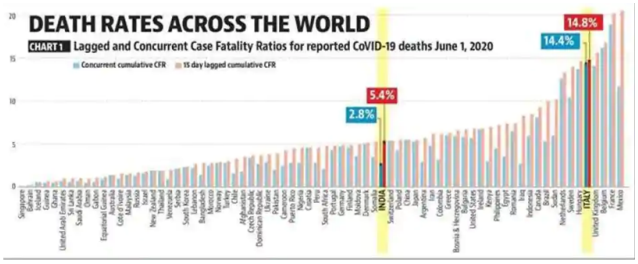


**Fig. 1:** Concurrent cumulative CFR & 15 day lagged cumulative CFR.

Concurrent cumulative case fatality rate of 2.8% and 15 day lagged cumulative case fatality rate is 5.5% among India which is lowest with other countries and it was highest for Italy, CCCFR-14.4% and 15 day lagged cumulative CFR - 14.8%

In India we do not have published national age specific CCFR, but the government of Maharashtra, in display of remarkable transparency in the face of the rising impact of the pandemic, provided age-specific cases and deaths from which age specific CCFR could be calculated.

In the critical number is in column (8) this is calculated by multiplying Italy's age-specific CFR in column (3) to the age –specific number of cases in India in column(7). The estimated numbers of death that should have occurred, if the age-specific death rates of Italy were to prevail in India is 535. The official number of deaths in India as of April 30 was actually twice that number, at 1074. It is possible to reconcile the fact that India's CCCFR is lower than Italy's in Figure 1 with the deaths in India being twice the expected number, if one examines the distribution of cases by age. It can be seen, Figure 2 a that more than half the patients in India and Maharashtra are under 40 years, while in Italy 56% in the age group above 60. India covid patients are much younger and thus, would have been less likely to die

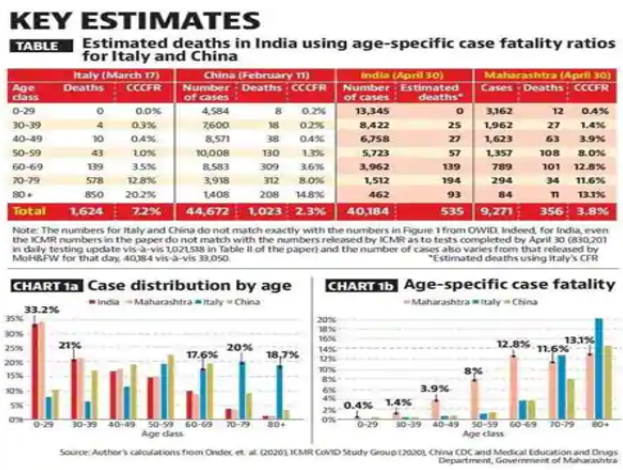


**Fig. 2:** Includes, Table number-1, **2a:** (CHART 1a) & **2b:** (CHART 1b)

in Italy or china has very low CCCFR for patients below 60. This is seen more clearly in Maharashtra, the only state to release age-specific CCCFR. Maharashtra CFR for those below 60 is well over four times higher than Italy, as seen in Figure 2b, even though Italy aggregate CFR of 7.2% is much higher than Maharashtra 3.8%. If it had Italy's age specific CCCFR, Maharashtra would have reduced its death by two-thirds and applying Maharashtra CCCFR to India would increase the national number of death by 50%. In India aggregate CFR is low because we have more young patients than other countries who are not expected to die. However, in India, they are dying at a rate much higher than expected, which means that India has a much higher CCCFR than it should given the experience of other countries. Instead of being among the lowest, India's age-adjusted death rate is actually higher than Italy's which is seen in Figure 1, has among the highest aggregate CCCFRs.

## 4. People at high risk of infection

Those who are in close contact with patients with symptomatic and asymptomatic COVID-19, including health care workers and other patients in the hospitals, are at higher risk of SARS-CoV2 infection. Older age and existence of underlying comorbodities (diabetes, hypertension and cardiovascular disease) are at higher risk and were associated with poorer prognosis.[4]

## 5. Clinical manifestations

The most common symptoms and signs at the onset of illness were fever, cough, myalagia, fatigue and headache. The primary symptoms were fever and cough. Loss of taste and smell have been recognized lately as one of the symptoms of COVID-19.[5]

On the basis of sign and symptoms the patients were divided into mild (including normal and mild) and severe (including severe and critical groups)

1. **Mild group:** had mild clinical symptoms and no pneumonia on imaging.
2. **Normal group:** had symptoms of fever, respiratory tract symptoms and imaging showed pneumonia.
3. **Severe group:** respiratory distress, respiratory rate≥30 / min. in a resting state, a mean oxygen saturation of ≤93%, and an arterial blood oxygen partial pressure (PaO2)/ oxygen concentration (Fio2)≤300 mm Hg.
4. **Critical group:** the critical group had respiratory failure and required mechanical ventilation. The occurrence of shock and the combined failure of multiple organs required intensive care unit monitoring and treatment.

## 6. Diagnosis

The diagnosis of COVID-19 can be based on a combination of epidemiologic information which includes history of travel or residence in affected region 14 days prior to symptoms onset. Clinical symptoms, CT imaging finding and laboratory test (RT-PCR) according to standards of either WHO (2020 a)[6] or the national health commission of china (2020a).[7] It should be mentioned that a single negative RT-PCR test results from suspected patients does not exclude infection.

## 7. Important consideration for diagnosis

The sensitivity of the detection kit currently used is not ideal.[8] In contrast, the symptoms were mild and multiple nucleic acid tests were negative, but the CT showed a large ground glass area in the lung. Therefore, some clinicians have suggested that a CT examination should be the first choice in the screening and diagnosis of COVID-19, and it has been suggested that patient should have a chest CT scan every 3-5 days to understand the changes in the lung lesions in order to more accurately evaluate the condition.

## 8. Treatment

The management of COVID-19 has been largely supportive and non-pharmacological. Current approaches to COVID-19 are to control the source of infection, use of infection prevention and control measures to lower the risk of transmission. Provide early diagnosis, isolation and supportive care for affected patients.[9]

### *8.1. According to the report of the WHO-China joint mission on coronavirus disease 2019(COVID-19) proposed response strategy*

This strategy was rapidly adapted and adjusted to the outbreak, both in terms of the epidemiological situation over time and in different parts of the country.

### *8.2. The epidemiological situation has been used to define location into four areas:*

1. **In areas without cases:** The strategy in these areas is to "strictly prevent introduction." This includes quarantine arrangements in transportation hubs, monitoring for temperature changes, use of fever clinics and ensuring normal economic and social operations.
2. **In areas with sporadic cases:** The strategy is focused on "reducing importation, stopping transmission and providing appropriate treatment."
3. **In areas with community clusters:** The strategy is focused on "stopping transmission, preventing exportation and strengthening treatment."
4. **In areas with community transmission:** The strict prevention and control strategies are being implemented, the entry and exit of people from these areas has been stopped and public health and medical treatment measures are comprehensively strengthened.

## 9. Conclusion

There is now strong evidence that non-pharmaceutical public health measures can reduce and even interrupt transmission. Health care workers fully educate public on the seriousness of COVID-19 and their role in preventing its spread. However, community/general population showed their active participation in prevention of its spread.

## 10. Source of Funding

None.

## 11. Conflict of Interest

None.

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