



## Coronavirus: Towards controlling of the pandemic - Indian scenario

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### ABSTRACT

Coronavirus disease 2019 (COVID-19) is a communicable infection caused by the novel coronavirus resulting in severe acute respiratory syndrome coronavirus 2 (SARS-CoV). It was recognized to be a health crisis for the general population of international concern on 30<sup>th</sup> January 2020 and conceded as a pandemic on 11<sup>th</sup> March 2020. India is taking various measures to fight this invisible enemy by adopting different strategies and policies. To stop the COVID-19 from spreading, the Home Affairs Ministry and the health ministry, of India, has issued the nCoV 19 guidelines on travel. Screening for COVID-19 by asking questions about any symptoms, recent travel history, and exposure. India has been trying to get testing kits available. The government of India has enforced various laws like the social distancing, Janata curfew, strict lockdowns, screening door to door to control the spread of novel coronavirus. In this pandemic, innovative medical treatments are being explored, and a proper vaccine is being hunted to deal with the situation. Infection control measures are necessary to prevent the virus from further spreading and to help control the current situation. Thus, this review illustrates and explains the criteria provided by the government of India to the awareness of the public to prevent the spread of COVID-19.

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### INTRODUCTION

A viral disease is said to occur when an infectious virus enters a eukaryotic body and infected virus particles bind and enter the susceptible cells. They have been heaved insight and is a significant threat

to the health of an individual. The commencement of the twenty-first century has been marked with the pandemic outbreaks, influenza in 2009, severe acute respiratory syndrome coronavirus (SARS- CoV) in 2002, and now the ongoing covid-19 pandemic 2019- 2020 (Casella *et al.*, 2020).

A recent endemic outbreak detected first in Wuhan, the greatest cosmopolitan region in China's Hubei territory was in the air and noted by the WHO on 31st December 2019. Clusters of people represented with symptoms similar to pneumonia; however, the etiological agent wasn't associated with it (Casella *et al.*, 2020).

It was then classified as "pneumonia of unknown aetiology" revealed to the earthly concerns by WHO on 4<sup>th</sup> January 2020 with no deaths (Casella *et al.*, 2020). The cases had links to the huanon seafood wholesale market; hence the virus was thought to

be zoonotic in origin. The agent of this pandemic at the present moment is believed to be a novel virus that belongs to the coronavirus (CoV) family. The WHO Director-General, Dr Tedros Adhanom Ghebreyesus, On 11th February 2020, publicly denoted it as "COVID-19," an acronym of "Coronavirus disease 2019" (Cascella *et al.*, 2020).

The flare-up of the two other moribund human respiratory coronaviruses (severe acute respiratory syndrome coronavirus -SARS CoV and Middle East respiratory syndrome Coronavirus -MERS CoV) 2020 leads to severe respiratory syndrome. It was recognized to be a health crisis for the general population of international concern on 30<sup>th</sup> January 2020 and conceded as a pandemic on 11<sup>th</sup> March 2020 (Wax and Christian, 2020).

In India, the first case was reported on 30<sup>th</sup> January 2020. The infection rate in India is significantly lower than the worst affected areas in the world; the virus has a rapid spread rate. It spreads via airborne droplets and close contact. Much still needs to be identified about the disease, mainly the inter-human interaction the spectrum of symptoms, and the treatment modality to eradicate the disease.

India is taking various measures to fight this invisible enemy of ours by adopting different strategies and policies. Some of them are screening, contact tracing, rapid testing, Janta curfews, lockdown and quarantine.

### Screening

Screening for COVID-19 is a process of a series of questions asked to determine if the person is at risk for acquiring COVID-19. The questions about the experience of any symptoms, recent travel history, and exposure or contact with someone who has been confirmed or suspected to be affected with COVID-19 are included. On 4th March 2020, the Minister of Health and Family Welfare made screening for all international passengers arriving in India mandatory, rigorous testing is the main focus of every country in their strategy to beat Covid-19. Many states and the cities in India had started door to door screening by sending the medical teams with proper tools and precautionary measures. As and when the cases increased changes in screening strategies were made. The government of India decided to screen the cases presenting with symptoms of pneumonia as well (Ghosh, 2020). The procedure was again revised owing to the rise in the number of cases in the country. From 9th April, patients showing similar symptoms, regardless of the history of travel and the history of a patient coming in contact with the suspected person were screened. All the people living in the hotspot areas

with complaints were screened (Ahuja and Bhaskar, 2020). The rapid rise in the cases leads the government to incorporate new ideas. Currently, the government has come out with the concept of contact tracing. Patients declared covid-19 positive were asked to reveal the people they have/had come in contact with in the recent past. These people are then being traced, screened and quarantined.

According to the World Health Organisation, a person should seek medical attention immediately if symptoms like fever, cough, and difficulty in breathing are observed. Other symptoms include tiredness and dry cough. Patients may experience symptoms like aches and pains, dysentery, nasal congestion, sore throat or running nose. As a person gets exposed to it, coronavirus symptoms can be experienced anywhere between 1 to 14 days. These symptoms are usually mild and begin gradually. There can be cases where a person gets infected, but doesn't feel unwell and barely develop any symptoms at all. However, older people, and patient's with health ailments like diabetes (Khatib *et al.*, 2008), cardiac disorders (Kasatwar *et al.*, 2018) or hypertension if tested positive are more likely to develop severe illness.

Person, who starts experiencing any COVID-19 symptoms, should simply call up to the Union health ministry's 24x7 helpline number: 01123978046. You can also mail them at ncov2019@gmail.com.

The district surveillance officer will pay a visit. If the officer observes that the chances of infection are high, they will be taken to a designated hospital via special ambulances arranged by the government, and the required tests will be conducted in the hospital. Using public transport is not advised.

### Travel and Restrictions

To stop the covid19 from spreading, the Home Affairs Ministry and the health ministry, of India has issued the nCoV 19 guidelines on travel and visa limitations (Regan *et al.*, 2020).

All visa or e-Visas which are granted to Indian nationals and have travelled to countries like China, South Korea, Japan, Iran and Italy on or after 1<sup>st</sup> February 2020, and who have not yet arrived in India are suspended with immediate effect. Such Indian citizens who are residing out of India cannot enter India by any mode of transportation. Those who are in urgent need to travel to India can apply for a fresh visa at nearest Indian Embassy, high commission or Consulate.

All foreign travellers and Indian nationals arriving India by sea-ways are required to present self-declaration form, which is then submitted to the

Health officials and the Immigration officials, this should include the address, phone number and history of travel.

All the foreign and Indian Passengers are supposed to get themselves medically checked up at the port of entry (Banerjaj, 2020). The government of India have officially made it compulsory to quarantine passengers who are coming from PRC, South Korea, Iran, Spain, France, Germany and Italy. India has also made Indian citizens coming from eleven nations to go through a compulsory self-quarantine under the observation of health officials.

### Curfew and Lockdown

A curfew is said to be an order which specifies a time during which specific regulations are applied. It refers to the time when people are required to return to and stay in their houses.

#### Janata curfew

Janata curfew was organized on 22<sup>nd</sup> March 2020 before the complete lockdown in which the citizens of India were requested to avoid public spaces and to stay in their houses from 7 pm- 9 pm. Janata curfew was the beginning of the battle for India against novel coronavirus. The nation at large except the individual involved in 'essential services' like medical services, news reporters, cops, firefighters and home delivery professionals were not included in the curfew. At 5 pm, every citizen stood in their balconies, windows or doorways and applauded as a gesture of appreciation to professionals of the essential services. People from the National Cadet Corps and National Service Scheme were to obligatorily enforce the curfew on to the population of the country.

#### Lockdown

Lockdown 1.0 - 25th March – 14th April : On 24th March under the leadership of honourable Prime Minister and the discussion with the government the decision was taken to put the entire country under lockdown from 25th march 2020 to prevent the spread of this pandemic at individual and community level. The lockdown was brought into effect after the confirmed cases in the country crossed the marked of 500. All shops, factories, workshops, markets and places of public interest including transport had been shut down and suspended with immediate effect. Under the lockdown, the people were restricted not to get out of their house. All the educational institutions, various industries and hospitality services too were suspended. Section 144 was imposed in several districts of Maharashtra including Mumbai (Regan et al., 2020). Essential services such as vegetable vendors, petrol pump,

general stores, ATM and hospitals were exempted from the shutdown (Shashank et al., 2020).

Health observers and experts have stated that the lockdown had reduced the rate of spread of disease till the date of 6<sup>th</sup> April 2020, which initially was doubling up every three days now to doubling up every six days (Banerjaj, 2020). Till 14<sup>th</sup> April the rate of positive cases went up to 4.42% and death rate up to 3.36% (Jain, 2020).

Lockdown 2.0 -15th April – 3rd May: On 14<sup>th</sup> April lockdown was declared to be extended for more 21 days, i.e. till 3rd May 2020 and some relaxations were implemented at places and districts where the spread is nil so that the life of people can get back to normal.

On 27th March, the Reserve Bank of India made a public statement enlisting a chain of guidelines as an aid to fight the economic consequences of the lockdown. The PM on 14th April 2020 said that every town and place of the country would be evaluated to check the spread of the pandemic if found safe those districts will be lifted off the lockdown. Still, if any new cases emerge in the areas set loose from the lockdown, the lockdown shall again be reimposed.

Lockdown 3.0-4 May-17th March: from 4th of may the lockdown was put forth for two more weeks, and the country divided into red, orange and green zones which were based on the infection levels. The hotspot zones were coded as red, places with some infection coded orange, and places with without any infection were coded green (zero confirmed cases). There were different rules implicated in different zones, and accordingly, certain relaxations were regulated.

Lockdown 4.0- 18th May–31st May: To control the outbreak nationwide lockdown extended and entered into its fourth phase. In here, interstate and intrastate movement of vehicles was allowed with the consent of the states and union territories. Scheduled timings were set for shops and markets to be kept open following social distancing. Night curfew from 7 pm to 7 am continues.

#### Aarogya Setu App

Aarogya Setu is an application for tracking people claimed as covid positive. It was developed for mobile, launched by the government led by Prime Minister. The application was developed by the National Informatics Centre that comes under the Ministry of Electronics and Information Technology, Government of India. (Banerjaj, 2020) The app was made to spread awareness about the flare-up of the infectious coronavirus and to secure essential medical services. Using the location information, the app

determines whether the person belongs to infected areas and if the person is at risk by scrutinizing the available databank of infected people pan-India. To determine if the person has been within six feet from the person harbouring the virus, the app requires activated Bluetooth on the device. This app supports 11 different languages which makes it easier and more accessible.

### Tests For Covid-19

In the initial stages of the outbreak, only people who had a travel history to high-risk places, individuals presenting with symptoms or individual in contact with a patient claimed to be corona positive were being tested. The government of India on 20<sup>th</sup> March decided to screen all patients presenting with pneumonia (Kotgire and Tankhiwale-nilima, 2011) like symptoms regardless of the history of travel or contact-free of cost (Maitriporecha, 2020).

On 17<sup>th</sup> March, private pathology labs were also permitted to examine covid-19 by the Union Ministry Of health. ICMR has given a statement stating that the private pathology labs will conduct the test free of cost.

On 19th March, director of the Centre for Disease Dynamics, Economics & Policy, Ramanan Laxminarayan, specified the fact that nation can encounter a "tsunami of cases within a few weeks" when the rate of testing multiples. He also added that the probable cause for the reduced figure of cases diagnosed to be positive is due to decrease tests carried out in the country. In comparison to other developed and the developing countries, we have reduced numbers of testing kits which clearly states the reason for under testing.

However, India has been trying to get testing kits from France, Germany, China, South Korea and Israel. We are also in constant communication for the kit with USA, UK, Canada, Japan and Malaysia (Roy and Chaudhury, 2020).

Mylab Discovery Solutions, a molecular diagnostic company which is situated in Pune, became the foremost Indian company to receive an affirmation for its RT-PCR tests from National Institute of Virology and the Indian Council of Medical Research (ICMR) on 24th March (Rajgopala, 2020; Soni, 2020).

The low-cost paper-strip test developed in Delhi Institute of Genomics and Integrative Biology can detect the coronavirus within an hour (Rajgopala, 2020; Soni, 2020).

ICMR, on 13th April, instructed to carry out pool testing in the areas with reduced infection rates (positivity rate lesser than 2%) (Chandna, 2020).

Testing for transmissions within the community is also being carried out. As of now no community transmissions has been reported in India.

### International Relations

The Indian government has put in great efforts to deal with the crises at present. We are amongst the least hit countries concerning the novel coronavirus. The oxford covid-19 government response tracker (OxCGRT) stated that the government of India is efficiently tackling the situating by taking swift, meticulous and timely action. India is not only protecting the people of its own but is also contributing to the health and survival of humanity across the globe.

India has sent fifteen tons of PPE and other exigency equipment to china by an Indian Air force Jet. Prime Minister suggested that SAARC nations can collectively strive to overcome the pandemic. This idea was appreciated by the leaders of many countries like Sri Lanka, Nepal, Bhutan Maldives, Afghanistan and Bangladesh

On 15th March, following a video conference which was held amongst the SAARC leaders, India shared out ₹74 crores as COVID-19 Emergency Fund for the SAARC countries (Jagannath, 2020).

India, on 4th April, banned the trade of hydroxychloroquine a drug used in the treatment for Covid-19 "without any exception", to stock up supplies for the future use of the drug for its citizens (Vidya and Krishnan, 2020). As the United States derives more than half of the supply of the medication from India called the Prime Minister Modi to release the ban on chloroquine. India approved to permit its trade on "humanitarian grounds" (Shashank et al., 2020).

On 11th April, the nation sent 15 doctors and health care professionals to help fight against corona-virus in Kuwait (Roche, 2020). In the present time, India is sending hydroxychloroquine (85 million tablets) and paracetamol tablets (500 million tablets) to 108 countries and one thousand tons of mixture for making paracetamol tablets (Gupta et al., 2020).

### Challenges for India to Deal with the Pandemic Covid19 Crisis

#### Fall in economy and unemployment

The novel coronavirus tsunami has impacted the business sector to a great extent, from petroleum to shipping, real-estate to apparel, aviation to hospitality and agriculture to poultry (Reddy, 2020). It is reported that due to complete lockdown in India less than a quarter, i.e. \$2.8 trillion economy is only functional. It is anticipated that we lose higher than Rs 32,000 crore (\$4.5 billion) per day until the end of lockdown (Reddy, 2020).

In the lockdown, novel medical treatments are being explored, and a proper vaccine is being hunted for to deal with the situation. Doctors, scientists and government have been working on this on their front foot since the start of the job. People with reserves and accessibility to food and shelter have somehow handled the situation. The most powerful impact has been on the large population of about 40 million migrant labourers, who are the backbones for India's agriculture, construction and other sectors (Reddy, 2020).

There has been much havoc within the community as they are away from their home, jobless and some of them starving. Because of the continuous increase in lockdown, they are not able to go back to their homes as no transportation is available. People have started taking the roads and walking back to their native places which are thousands of kilometres away. However, the community has managed to cope up in a situation with the help of the government and other people. Some of them are still struggling. There can be a quick recovery in our agricultural backbone which accounts for about 14% of our GDP and can grow even next year. Most industries can quickly be operational as soon as the pandemic is over as there is no damage being caused to the physical infrastructure of the industries (Reddy, 2020).

The micro, small and medium enterprises sector contributes to almost 30% of India's GDP and are the ones being most damaged. A relief package of Rs. 20,000 crore had been announced by the government to support and help them to start the business again and to pay to their employees. What is most important is to get people safely back to their work so, the priority as of now should be, to deal with the situation and succeed against the virus as a whole country; anything else can be managed later.

### Testing for Covid19

In addition to the measures taken to deal with the virus situation, the significant need now is continuous testing. India has been lacking in providing with the test kits, and thus very less testing was being carried out. Starting with the first test in Pune, only four labs were dedicated to corona testing in the country. But the situation has been improving with the passing time. Starting with the one lab one test scenario, it has now reached to 1 lakh tests per day in May. According to ICMR, 25 lakh Covid19 tests have been carried out in India so far. In the past two months, there is a 100 times increase in the number of tests being carried out. Even though the testing capacity is increased, the cases are still rising every day, breaking all the previous records. Yet, India lacks

behind other countries in testing and provisions to improve this are being carried out (Gunasekar and Srinivasan, 2020). Tedros Adhanom Ghebreyesus, WHO Director-General said, "We have a simple message to all countries - test, test, test." Government has started distributing testing materials of around 40 tonnes via 150 flights operating under the "Mission Lifeline Udaan" scheme (Gunasekar and Srinivasan, 2020).

To reduce the risk of labs running out of materials, to decrease the transit time and to reduce possible logistical issues, 16 storage depots have been set up across India for the testing materials. There has been an increase in the production of testing equipment, with two lakh swabs per day being manufactured by three companies. Meanwhile, five million viral extraction kits and 10 million RT-PCR tests have been produced by a private company (Gunasekar and Srinivasan, 2020).

### Covid19 centres

Across India, a total of 586 hospitals have been declared as Covid19 centres, with a capacity of more than 1lakh beds and around 11500 ICU beds and increasing every day (Reddy, 2020). Many isolation centres have been made for the suspects. Private hospitals also create dedicated negative pressure beds for COVID-19 patients. Train compartments are converted into isolation wards by the railways. Hotel rooms are offered by various hotel chains and corporate houses to serve as isolation units and to be in quarantine.

### Requirement of PPE

To protect the health care staff and to address the need for dedicated COVID- 19 workers there is enormous need to provide with enough amount of PPE's and other consumables. Hospitals have been making huge investments and demands for this. Rebound and recovery of our country and its economic situation depends on how healthy and productive our population remains. This is possible only when health care workers are healthy enough to provide their services. So, it is important to support the health sector generously.

There was a time when India was lacking in providing personal protective equipment as per demand. But now it has increased its production capacity and has been ranked second in the world for the production of PPE, after China (Cascella et al., 2020). Steps have been taken to ensure that only certified PPE is being supplied to the hospitals. Many production centres are being made to increase production.

## CONCLUSIONS

The government of India has enforced various laws like the social distancing, Janata curfew, strict lockdowns, screening door to door to control the spread of novel coronavirus. They have also launched an app which informs about the positive cases in and around. The central and the state government have been taking special care for supplying the daily necessities to the general public. The arrangements of medical equipment and the large-scale production of both the test kits and the drugs for not only the citizens of India but also for the people worldwide has made it to emerge as a superpower and has also established good international relations. The various measures reinforced by the state and the central government and the support of the public by following different implemented rules and regulations has controlled the spread of infection to a vast extent in comparison to other countries.

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