



Role of IT During Covid-19 Pandemic in Second Wave on the Rural People of India in 2021

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ABSTRACT: COVID-19 is a disease caused by a new strain of coronavirus. 'CO' stands for corona, 'VI' for virus, and 'D' for disease. Formerly, this disease was referred to as '2019 novel coronavirus' or '2019-nCoV'. Currently, the entire world is experiencing the desolation and devastation of a deadly virus, the new disease of COVID-19, emerging from the new coronavirus SARS-CoV 2, has spread throughout the world, affecting more than 200 countries and hundreds of people, with discouraging morbidity and mortality figures.

Information Technology can not be separated with computer. The meaning of the word computer is no longer just a calculating machine, as it literally means, but also a communication tool and can also act as a video player, audio player and others. Content that is processed by computers and communications has undergone fundamental changes in the last 20 years. Accenture Technology Vision 2019 research states that (the post-digital world) It's a world where products, services, and even people's surroundings are customized, and where businesses cater to the individual in every aspect of their lives, shaping the very realities they live in. The developed information technology trend is referred to as DARQ, namely Distributed Ledger Technology, Artificial Intelligence, Extended Reality and Quantum Computing.

The outbreak of coronavirus disease (COVID-19) has been declared a Public Health Emergency of International Concern (PHEIC) and the virus has now spread to many countries and territories. While a lot is still unknown about the virus that causes COVID-19, we do know that it is transmitted through direct contact with respiratory droplets of an infected person (generated through coughing and sneezing). Individuals can also be infected from touching surfaces contaminated with the virus and touching their face (e.g., eyes, nose, mouth). While COVID-19 continues to spread it is important that communities take action to prevent further transmission, reduce the impacts of the outbreak and support control measures. The protection of children and educational facilities is particularly important.

Key words: Coronavirus, contamination, Quantum Computing, vaccination, DARQ, AI System

Introduction:

All this started at the end of December 2019, specifically on the 31st, where the Chinese Disease Control Center reported 27 cases of patients with pneumonia of uncertain etiology and who had uncommon a Hunan seafood market that it lacked sanitary measures, warning of a possible zoonosis. On January 7 its causal agent was identified, which was a coronavirus and it was called with the name of the new coronavirus (2019-nCoV).

The researchers delimited the 2019- nCoV sequence with that of other viruses through a database of genetic sequences, discovering that the most related were two viruses of Chiroptera origin as indicated by their scientific name (bats), However, their similarities were less than 90%, therefore, it was suggested that there was the possibility that there was another animal reservoir that acted as an intermediary between bats and humans. On February 11, the WHO coined the name SARS-CoV 2 and until March 11 it was declared by the same entity as a pandemic.

The clinical picture of patients with COVID-19 has a pattern of respiratory dominance and depends on the tropism of the virus towards the target organs of the body This receptor is highly expressed in multiple body tissues, including lung, gastrointestinal, kidney and cardiac tissue, explaining the symptoms present in the prodromal of the disease.

The coronavirus disease (COVID-19) pandemic, which originated in the city of Wuhan, China, has quickly spread to various countries, with many cases having been reported worldwide. As of May 8th, 2020, in India, 56,342 positive cases have been reported. India, with a population of more than 1.34 billion—the second largest population in the world—will have difficulty in controlling the transmission of severe acute respiratory syndrome coronavirus 2 among its population. Multiple strategies would be highly necessary to handle the current outbreak; these include computational modeling, statistical tools, and quantitative analyses to control the spread as well as the rapid development of a new treatment.

The Ministry of Health and Family Welfare of India has raised awareness about the recent outbreak and has taken necessary actions to control the spread of COVID-19. The central and state governments are taking several measures and formulating several wartime protocols to achieve this goal. Moreover, the Indian government implemented a 55-days lockdown throughout the country that started on March 25th, 2020, to reduce the transmission of the virus. This outbreak is inextricably linked to the economy of the nation, as it has dramatically impeded industrial sectors because people worldwide are currently cautious about engaging in business in the affected regions.

IT Management Behaviour of Crisis-Life Cycle

In management's view, investment in information technology (IT) has often been considered a prerequisite and source of economic innovation, but is also seen as an excessive cost, which cannot be properly assessed [8]. In reality, management and information technology are inseparable in managing people's lives, both in normal and crisis situations. New technology has been incorporated into everyday life unnoticed. The most important role of technology in a crisis management situation is: (a) to connect, inform and ultimately save the lives of those affected by the disaster; (b) to restore connectivity to the affected area so that the government can communicate with citizens and people can find their loved ones; (c) to enable respondents to coordinate rescue missions and work efficiently since they arrived in the disaster zone; (d) to help with business recovery so that the community can start rebuilding more quickly; (e) to help the process of analyzing, tracking and studying natural disasters, after and during incidents so

that we can always learn and develop better solutions and prepare to save more lives.

In general it can be said that the development of computing and telecommunications technology in the latter part of the 20th century and the beginning of the 21st century will dramatically change crisis management, as it is known today. Managers, involved in a state of crisis management will combine resources and new technology utilities to improve all elements of decision making in dealing with and handling crises.

The role of technology in crisis management is divided into two, namely the role of technology in the provision of infrastructure (digital telephones, satellite dishes, scanners, fax machines, personal computers, local and wide area networks including the Internet, digital cameras, geographic positioning systems, geographic information systems, programs modeling chemical dispersions, digital pagers, and portable weather stations) and the role of technology in managing information flow throughout the crisis management process (mitigation, preparedness, response & recovery)

Role of IT to Prevent/Stop the Spread

The focus of the discussion in this section is the answer to the question 'what is the role of information technology for pandemic mitigation', namely the role of information technology to prevent and to stop the spread of a pandemic. Search for articles related to preventing and or to stopping the spread of a pandemic based on the role of technology that can directly affect the process (prevention and stopping the spread) and the role of technology that does not directly affect the process.

Technology that has a direct impact on the process is technology that is to assist in health care facilities and to support the community to be united towards a pandemic. Whereas technologies that do not have a direct impact on the process but which strongly support the achievement of the process when mitigation is carried out with a policy of maintaining distance are technologies that allow less human contact but do not reduce the quality and intensity of information exchange.

1) Directly Impacting Technology

Technologies that have a direct influence on efforts to prevent and stop the spread of a pandemic

2) Non-Directly Impacting Technology

a) Video Conference Dan Instant Messaging

With the absence of medicines for treatment and vaccines for prevention, the policies adopted by the health authorities in each country are social restrictions that have an economic and non-economic impact. Social distancing is an important step to slow the spread of COVID-19. If transmission is not prevented then the health care capacity will soon reach its maximum point. Without current technology, social distancing would mean full isolation. Ranging from work, education, worship, to personal socializing activities. Technology allows us to make the minimum distance possible and allows us to interact online.

The economic impact of a pandemic can be very heavy for almost all economic sectors. The tourism business, hotels, restaurants, are one of the many sectors that are strongly affected by the COVID-19 pandemic. Detailed reviews of the economic impacts are excluded from this paper.

The non-economic impact that shows the role of IT in this mitigation and preparation period is the implementation of business continuity plans for business people through online communication facilities such as Face time, Zoom, Skype, Webex, Slack, Microsoft Teams and others besides instant messenger applications that have been previously known like WhatsApp, WeChat and others. This technology has helped people around the world to stay socially connected from their homes for both business and personal

needs. The use of video conferencing applications increased rapidly during the pandemic, including data found in the popularity of video conferencing applications.

b) Drone

During this mitigation and preparation period, IT also has an operational role in monitoring and providing support to areas and affected people through remote control using Drone devices. Drones are widely used by China, the US, Spain and other countries to prevent transmission of COVID-19 by being used to monitor quarantine, spray disinfectants, monitor traffic, and send medical supplies. Drones are also used in Chile to deliver medicine to elderly people who have difficulty when they have to isolate themselves at home and deliver parcels or even passengers. This is possible because currently drone technology has experienced rapid development with the application of sophisticated computers, high resolution digital cameras, GPS systems, and lightweight materials such as plastic and carbon fiber. Recent developments in the use of drones have been found in New York, where the use of drones and their supporting applications are used to detect temperatures, heart rates and respiratory rates of people in the crowd and to monitor search and rescue efforts.

Role of IT to Track

The focus of the discussion in this section is the search for previous articles and journals to answer the second research question 'What is the role of information technology in the face of a pandemic?'. In the face of a pandemic, direct efforts will be made in the early warning system, monitoring the condition and development of the patient.

1) Early Warning System

a) Artificial Intelligence

Early warning can be done if there is a trigger for action so that an appropriate reaction response can be decided. One of the IT devices found to have a role at this time was Artificial Intelligence (AI), which is the field of computer science that emphasizes the creation of intelligent machines that work and react like humans.

Reporters from associated press conducted research that the first warning outside of China was carried out by the HealthMap system at Boston Children's Hospital which scanned online news and social media to look for infectious diseases. This AI technology found a social media upload that discusses Wuhan's health authorities regarding unexplained pneumonia. The warning detected from this AI system was issued 1 week before the information of the COVID-19 pandemic was announced by international organizations. This shows one of the roles of AI technology in helping to provide early warning and information that is useful for the decision making process.

2) Monitoring of Suspect and Patient Condition

a) Artificial Intelligence

The use of technology to monitor the condition of suspects and patients was found in Wang et.al. which utilizes neural network technology and machine learning for disease tracking by trying to recognize abnormal breathing patterns. This AI technology is also used to recognize Baricitinib's ability (a type of drug), which is predicted to reduce the ability of the virus to infect lung cells and more broadly to find drugs that match the symptoms and symptoms that are recognized

b) Blockchain

In addition to AI technology, Blockchain technology was also found to play a role in handling this Covid-19 pandemic. As we know blockchain technology is a distributed digital record data storage system that is connected via cryptography. In the medical world, the use of blockchain technology has been proven to increase diagnostic accuracy and effectiveness of treatment, track the supply chain of medicines and medical supplies, manage medical data and identify patterns of disease symptoms.

In cases like COVID-19 where large amounts of incoming data are released in real-time, Blockchain can reduce uncertainty and offer computational trust and be an automated platform for recording and exchanging factual information consistently with many parties

c) Big Data and Smart Management System

The use of Big Data technology was discovered from South Korea's strategy of controlling COVID-19. South Korea uses a system called COVID-19 Smart Management System (SMS) based on big data to track individuals infected with COVID-19 and track people who have a history of contact with these patients. The South Korea Disease Control and Prevention Center (KCDC) runs a contact tracking system that uses data from 28 organizations such as the National Police Agency, Credit Finance Association, three smartphone companies, and

22 credit card companies to track the movements of individuals infected with COVID-19. After successfully identifying individuals who made contact with infected people, KCDC informed the local community health center near the residence of the infected person and the health center sent them a notification. If the test results are positive, they will be treated in a dedicated COVID-19 hospital, whereas if these individuals have no symptoms then they are asked to remain in isolation for 14 days

South Korea has prepared a legal basis for accessing personal information after the outbreak of the 2015 MERS outbreak. South Korea has learned that tracking the movements of infected people and people who come in contact with them is very important. As a security measure, only KCDC epidemic investigators can access location information and once the COVID-19 outbreak ends, personal information used for contact tracing will be deleted.

Role of IT to Treat

In this section the discussion focuses on previous articles and research to answer the question ‘What is the role of technology in the recovery period of a pandemic?’ Followed by section D which discusses the results of the search for the role of IT for the community.

1) Robot and IoT

With the absence of the Covid-19 drug and vaccine, recovery efforts cannot be maximally carried out through physical contact between humans. At this time with the limitations of human contact, Robot technology becomes one of the alternative solutions.

The emergence of robots is often a debate because robots are considered to be able to replace human work, so that many industrial sectors feel threatened and disrupted by the use of robots. However the COVID-19 pandemic could accelerate the community's acceptance of the use of robots to replace some human work. When the COVID-19 pandemic occurred, the robot was used as an intermediary for medical personnel to do jobs that have a high level of risk for contracting COVID-19.

It was found that China opened a health facility run by robots in Wuhan, where the COVID-19 pandemic began. All medical services at the facility are carried out by robots and Internet of Things (IoT) devices. Patients wear smart bracelets and rings that are synchronized with the AI CloudMinds platform so that their vital signs, including temperature, heart rate and blood oxygen levels, can be monitored. Doctors and nurses also wear devices to catch early signs of infection. Meanwhile, other robots provide food, drinks, and medicines to patients, and also perform tasks such as spraying disinfectants and cleaning the floor.

In addition, the robot is also used by the US at the International Airport in Los Angeles, San Francisco and New York which uses a germ killing robot named GermFalcon to clean the aircraft. Besides shipping services using robots are also available in several areas in Washington D.C.

To reduce the risk of being dangerous to humans during a pandemic, it is evident that the use of robots will be more beneficial than before.

Role of IT for Society

The policy of social restrictions and physical restrictions raises 3 domain areas where information technology will play a role to support the implementation of these policies, namely work from home (WFH), distance learning and the implementation of various monitoring efforts [10].

The basic requirements for someone to work from home and distance learning are computing devices, internet accessibility and a camera if needed. Meetings and conferences can be done remotely via video conferencing. With the advancement of communication technology and network connectivity, remote work has functioned well. When considering security, calls can be encrypted and firewall software can be used.

Meanwhile, surveillance efforts using IT were also found to have been enforced in China by installing CCTV in the apartment entry access found among the residents suffering from Covid-19. In Singapore, the government launched the Trace Together application, utilizing Bluetooth technology to identify potential coronavirus carriers near its users. Another example also found in Hong Kong where the government uses wristband for citizens to monitor compliance with the quarantine policy applied by alerting the authorities if the user is not in the designated area .

Current Scenario in India

As per the official government guidelines, India is making preparations against the COVID-19 outbreak, and avoiding specific crisis actions or not understating its importance will have extremely severe implications. All the neighboring countries of India have reported positive COVID-19 cases. To protect against the deadly virus, the Indian government have taken necessary and strict measures, including establishing health check posts between the national borders to test whether people entering the country have the virus. Different countries have introduced rescue efforts and surveillance measures for citizens wishing to return from China. The lesson learned from the SARS outbreak was first that the lack of clarity and information about SARS weakened China's global standing and hampered its economic growth.

The outbreak of SARS in China was catastrophic and has led to changes in health care and medical systems. Compared with China, the ability of India to counter a pandemic seems to be much lower. A recent study reported that affected family members had not visit the Wuhan market in China, suggesting that it may spread without manifesting symptoms. Researchers believe that this phenomenon is normal for many viruses. India, with a population of more than 1.34 billion—the second largest population in the world—will have difficulty treating severe COVID-19 cases because the country has only 49,000 ventilators, which is a minimal amount. If the number of COVID-19 cases increases in the nation, it would be a catastrophe for India. It would be difficult to identify sources of infection and those who come in contact with them. This would necessitate multiple strategies to handle the outbreak, including computational modeling as well as statistical and quantitative analyses, to rapidly develop new vaccines and drug treatments. With such a vast population, India's medical system is grossly inadequate. A study has shown that, owing to inadequate medical care systems, nearly 1 million people die every year in India. India is also engaged in trading with its nearby countries, such as Bangladesh, Bhutan, Pakistan, Myanmar, China, and Nepal. During the financial year 2017–18, Indian regional trade amounted to nearly \$12 billion, accounting for only 1.56% of its total global trade value of \$769 billion. The outbreak of such viruses and their transmission would significantly affect the Indian economy. The outbreak in China could profoundly affect the Indian economy, especially in the sectors of electronics, pharmaceuticals, and logistics operations, as trade ports with China are currently closed. This was further supported by the statement by Suyash Choudhary, Head—Fixed Income, IDFC AMC, stating that GDP might decrease owing to COVID-19.

Economists assume that the impact of COVID-19 on the economy will be high and negative when compared with the SARS impact during 2003. For instance, it has been estimated that the number of tourists arriving in China was much higher than that of tourists who traveled during the season when SARS emerged in 2003. This shows that COVID-19 has an effect on the tourism industry. It has been estimated that, for SARS, there was a 57 and 45% decline in yearly rail passenger and road passenger traffic, respectively. Moreover, when compared with the world economy 15 years ago, world economies are currently much more inter-related. It has been estimated that COVID-19 will hurt emerging market currencies and also impact oil prices. From the retail industry's perspective, consumer savings seem to be high. This might have an adverse effect on consumption rates, as all supply chains are likely to be affected, which in turn would have its impact on supply when compared with the demand of various necessary product items. This clearly proves that, based on the estimated losses due to the effect of SARS on tourism we cannot estimate the impact of COVID-19 at this point. This will be possible only when the spread of COVID-19 is fully controlled. Until that time, any estimates will be rather ambiguous and imprecise.

The OECD Interim economic assessment has provided briefing reports highlighting the role of China in the global supply chain and commodity markets. Japan, South Korea, and Australia are the countries that are most susceptible to adverse effects, as they have close ties with China. It has been estimated that there has been a 20% decline in car sales, which was 10% of the monthly decline in China during January 2020. This

shows that even industrial production has been affected by COVID-19. So far, several factors have thus been identified as having a major economic impact: labor mobility, lack of working hours, interruptions in the global supply chain, less consumption, and tourism, and less demand in the commodity market at a global level. which in turn need to be adequately analyzed by industry type. Corporate leaders need to prioritize the supply chain and product line economy trends via demand from the consumer end. Amidst several debates on sustainable economy before the COVID-19 impact, it has now been estimated that India's GDP by the International Monetary Fund has been cut down to 1.9% from 5.8%. The financial crisis that has emerged owing to the worldwide lockdown reflects its adverse effect on several industries and the global supply chain, which has resulted in the GDP dropping to 4.2% for, which was previously estimated at 4.8%. Nevertheless, it has been roughly estimated that India and China will be experiencing considerable positive growth among other major economies.

Preparations and Preventive Measures in India

An easy way to decrease SARS-CoV-2 infection rates is to avoid virus exposure. People from India should avoid traveling to countries highly affected with the virus, practice proper hygiene, and avoid consuming food that is not home cooked. Necessary preventive measures, such as wearing a mask, regular hand washing, and avoiding direct contact with infected persons, should also be practiced. The Ministry of Health and Family Welfare (MOHFW), India, has raised awareness about the recent outbreak and taken necessary action to control COVID-19. Policy guidelines on surveillance, clinical management, infection prevention and control, sample collection, transportation, and discharging suspected or confirmed cases. Those who traveled from China, or other countries, and exhibited symptoms, including fever, difficulty in breathing, sore throat, cough, and breathlessness, were asked to visit the nearest hospital for a health check-up. Officials from seven different airports, including Chennai, Cochin, New Delhi, Kolkata, Hyderabad, and Bengaluru, have been ordered to screen and monitor Indian travelers from China and other affected countries. In addition, a travel advisory was released to request the cessation of travel to affected countries, and anyone with a travel history that has included China since January 15th, 2020, would be quarantined. A centralized control room has been set up by the Delhi government at the Directorate General of Health Services, and 11 other districts have done the same. India has implemented COVID-19 travel advisory for intra- and inter-passenger aircraft restrictions.

India is known for its traditional medicines in the form of AYUSH (Ayurvedic, Yoga and Naturopathy, Unani, Siddha, and Homeopathy). The polyherbal powder Nilavembu Kudineer showed promising effects against dengue and chikungunya fevers in the past. With the outbreak of COVID-19, the ministry of AYUSH has released a press note "Advisory for Coronavirus," mentioning useful medications to improve the immunity of the individuals. As a step further, on the technological aspect, the Union Health Ministry has launched a mobile application called "AarogyaSetu" that works both on android and iOS mobile phones.

Precautions are necessary to prevent the potential spread of COVID-19. It is important to remember that COVID-19 does not differentiate between borders, ethnicities, disability status, age or gender. Education settings should continue to be welcoming, respectful, inclusive, and supportive environments to all. Measures taken by schools can prevent the entry and spread of COVID-19 by students and staff who may have been exposed to the virus, while minimizing disruption and protecting students and staff from discrimination. Purpose Today, children and young people are global citizens, powerful agents of change and the next generation of caregivers, scientists, and doctors. Any crisis presents the opportunity to help them learn, cultivate compassion and increase resilience while building a safer and more caring community.

Having information and facts about COVID-19 will help diminish students' fears and anxieties around the disease and support their ability to cope with any secondary impacts in their lives. This guidance provides key messages and considerations for engaging school administrators, teachers and staff, parents, caregivers and community members, as well as children themselves in promoting safe and healthy schools.

The guidance, while specific to countries that have already confirmed the transmission of COVID-19, is still relevant in all other contexts. Education can encourage students to become advocates for disease prevention and control at home, in school, and in their community by talking to others about how to prevent the spread of viruses. Maintaining safe school operations or reopening schools after a closure requires many considerations but, if done well, can promote public health.

Following basic principles can help keep students, teachers, and staff safe at school and help stop the spread of this disease. Recommendations for healthy schools are:

- Sick students, teachers and other staff should not come to school
- Schools should enforce regular hand washing with safe water and soap, alcohol rub/hand sanitizer or chlorine solution and, at a minimum, daily disinfection and cleaning of school surfaces
- Schools should provide water, sanitation and waste management facilities and follow environmental cleaning and decontamination procedures
- Staggering the beginning and end of the school day
- Cancelling assemblies, sports games and other events that create crowded conditions
- Schools should promote social distancing (a term applied to certain actions that are taken to slow down the spread of a highly contagious disease, including limiting large groups of people coming together)

Know the latest facts Understand basic information about coronavirus disease (COVID-19), including its symptoms, complications, how it is transmitted and how to prevent transmission. Stay informed about COVID-19 through reputable sources such as UNICEF, WHO and national health ministry advisories. Be aware of fake information/myths that may circulate by word-of-mouth or online. Ensure safe school operations See 'Checklist on Safe School Environments' below Update or develop school emergency and contingency plans. Work with officials to guarantee schools are not used as shelters, treatment units, etc. Consider cancelling any community events/meetings that usually take place on school premises, based on risk. Reinforce frequent hand washing and sanitation and procure needed supplies. Prepare and maintain hand washing stations with soap and water, and if possible, place alcohol-based hand rub (hand sanitizers) in each classroom, at entrances and exits, and near lunchrooms and toilets. Clean and disinfect school buildings, classrooms and especially water and sanitation facilities at least once a day, particularly surfaces that are touched by many people (railings, lunch tables, sports equipment, door and window handles, toys, teaching and learning aids etc.) Implement social distancing practices that may include:

The COVID-19 pandemic has been a part of our daily lives since March 2020, but with about 115,000 new cases a day in the United States and the U.S. death toll at more than 464,000, it Remains as important as ever to stay vigilant and know how to protect yourself from Coronavirus

.the Indian scenario is even worse since the beginning of the second wave. Lakhs of People are getting infected in a day and thousands are dying. According to the Centers for Disease Control and Prevention (CDC), "The best way to prevent illness is to avoid being exposed to this Virus." As the vaccines continue their roll out, here are the simple steps you can take to help prevent

The spread of COVID-19 and protect yourself and others.

Know how it spreads

Scientists are still learning about COVID-19, the disease caused by the coronavirus, but according to the CDC, this highly contagious virus appears to be most commonly spread during close (within 6 feet) person-to-person contact through respiratory droplets.

“The means of transmission can be through respiratory droplets produced when a person coughs or sneezes, or by direct physical contact with an infected person, such as shaking hands,” says Dr. David Goldberg, an internist and infectious disease specialist at New York-Presbyterian Medical Group Westchester and an assistant professor of medicine at Columbia University Vagelos College of Physicians and Surgeons.

The CDC also notes that COVID-19 can spread by airborne transmission, although this is less common than close contact with a person. “Some infections can be spread by exposure to virus in small droplets and particles that can linger in the air for minutes to hours,” the CDC states. “These viruses may be able to infect people who are further than 6 feet away from the person who is infected or after that person has left the space. These transmissions occurred within enclosed spaces that had inadequate ventilation.” Finally, it’s possible for coronavirus to spread through contaminated surfaces, but this is also less likely. According to the CDC, “Based on data from lab studies on COVID-19 and what we know about similar respiratory diseases, it may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes, but this isn’t thought to be the main way the virus spreads.”

The following actions help prevent the spread of COVID-19, as well as other coronaviruses and influenza:

- Wear a face mask, as advised by the CDC.
- Maintain at least six feet of distance between yourself and others.
- Avoid large gatherings.
- Socialize outdoors.
- Avoid close contact with people who are sick.
- Minimize touching your eyes, nose, and mouth.
- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean frequently touched objects and surfaces regularly.
- Wash your hands often with soap and water.
- Get vaccinated as soon as you are eligible.

According to new guidance from the CDC, fully vaccinated people no longer need to wear a mask outdoors, except in certain crowded settings and venues. This was part of a larger CDC announcement that outlines the relative safety of indoor and outdoor activities for vaccinated and unvaccinated people, and provides guidance on mask wearing and other preventive measures.

In broad strokes, all outdoor activities are considered safe for fully vaccinated people, with continued masks and distancing only advised for crowded outdoor activities. Many indoor activities are also considered safe for fully vaccinated people, with the caveat that even those who have been vaccinated should continue to wear masks and physically distance in indoor spaces, like malls, where there are likely to be a mix of vaccinated and unvaccinated people. (Earlier CDC guidance had already made it okay for small

groups of fully vaccinated people to gather indoors without masks or distancing.)

Unvaccinated people may also choose to go unmasked while walking, running, or biking outdoors or when gathering outdoors with a small group of vaccinated people. However, unvaccinated people are advised to mask in other outdoor situations. They should also mask and distance indoors, and should be aware that all indoor activities are considered less safe for people who haven't been fully vaccinated.

Anyone who comes into close contact with someone who has COVID-19 is at increased risk of becoming infected themselves, and of potentially infecting others. Contact tracing can help prevent further transmission of the virus by quickly identifying and informing people who may be infected and contagious, so they can take steps to not infect others.

Contact tracing begins with identifying everyone that a person recently diagnosed with COVID-19 has been in contact with since they became contagious. In the case of COVID-19, a person may be contagious 48 to 72 hours before they started to experience symptoms.

The contacts are notified about their exposure. They may be told what symptoms to look out for, advised to isolate themselves for a period of time, and to seek medical attention as needed if they start to experience symptoms.

Herd immunity occurs when enough people become immune to a disease to make its spread unlikely. As a result, the entire community is protected, even those who are not themselves immune. Herd immunity is usually achieved through vaccination, but it can also occur through natural infection.

Experts initially estimated that somewhere between 60% and 70% of the population needs to be immune in order to achieve herd immunity. More recently, they have raised that estimate to near 90%. (As of now, we are nowhere close to the numbers needed to achieve herd immunity.)

Achieving herd immunity through natural infection means many people would become ill and many would die. These risks may fall as we develop effective treatments. However, we still don't know how long people who recover from COVID-19 will remain immune to reinfection.

Ideally, we will achieve herd immunity as more people around the world receive vaccines that will confer lasting immunity.

How second wave of Covid-19 is different from first in symptoms, spread:



The second wave of Covid-19 pandemic has several minute, yet differentiating characteristics in terms of symptoms, age-profile and spatial distribution

he second wave of Covid-19 pandemic continues to stay strong in India. India has detected more than 20.65 lakh cases in the first half of April itself . This is the fastest rate of Covid-19 spread in India. The second wave of Covid-19 pandemic has several minute, yet differentiating characteristics in terms of symptoms, age-profile and spatial distribution.

NEW HOMEGROWN VARIANTS

During the first wave of the Covid-19 pandemic in India, local mutations did not play a major contributing role. But many experts believe that the current surge in Covid-19 cases is being pushed by homegrown mutant variants of SARS-CoV-2. Genome sequencing in Maharashtra attributed over 60 per cent of fresh cases to India-grown mutant variants of coronavirus.

YOUNGER PEOPLE MORE VULNERABLE?

Some experts and chief ministers such as Arvind Kejriwal of Delhi have claimed that the second wave of Covid-19 pandemic is affecting younger people more compared to the first wave seen in 2020.

Arvind Kejriwal recently said more than 65 per cent Covid-19 patients in Delhi — one of the worst-affected places — are below 45 years of age. Arvind Kejriwal, however, did not provide a data-set comparing the second wave with the first.

During the first wave, government data in December 2020 suggested that while under-45 patients formed 60 per cent of all Covid-19 cases, the mortality rate was much higher among older people — 88 per cent.

In the current wave of Covid-19 surge, states such as Maharashtra and Karnataka have reported near-50 per cent infections from among people below 45 years. However, there could be an explanation to this trend.

Older and more vulnerable people have largely remained indoors as cases rose and they were also among the priority group for vaccination that has proven to reduce severity of the Covid-19 illness. Further, the younger ones are more mobile due to their greater engagement in economic activities.

MORE CHILDREN GETTING INFECTED

Government data earlier this month showed that about 80,000 children tested positive for Covid-19 in the five worst-affected states -- Maharashtra, Chhattisgarh, Uttar Pradesh, Karnataka and Delhi -- from March 1 to April 4. Since then, doctors have said more children are increasingly testing positive for Covid-19.

But there is a note of caution coming from health experts. They say since most children were asymptomatic in the first wave of Covid-19 pandemic and the healthcare system was being prepared to deal with severe cases, a large number of children might have remained undiagnosed even if they contracted the coronavirus infection.

NEW SYMPTOMS

Most symptoms of Covid-19 remain the same in the second wave as in the first including fever, chills, body ache, loss of smell and taste, and loss of breath or respiratory complications.

Other symptoms which were not very common among Covid-19 patients in India last year are being reported with greater frequencies. These symptoms are pink eyes, loose motions and hearing impairment, which is a totally new sign detected in the second wave of Covid-19 pandemic.

COVID-19 SPREAD, CONCENTRATION

The first wave of Covid-19 was more widespread in geographical reach with hotspots spread all over the country. The second wave is more infectious but has been limited to fewer hotspots.

The Lancet Covid-19 Commission by India Task Force members, published this week, said the second wave is clustered. While over 40 districts reported 50 per cent of all Covid-19 cases in India in the first wave, only 20 are currently reporting half the coronavirus infections.

At its peak in the first wave in August-September 2020, Covid-19 pandemic saw 60-100 districts reporting 75 per cent of the cases in India. The report said only 20-40 districts are reporting 75 per cent of all cases in the second wave.

VACCINE

India is witnessing a second wave of Covid-19 pandemic when the country is concurrently running a vaccination drive. Till now, vaccines are available only for the 45-plus population. Demands are rising for opening up vaccination for all those who need it.

To ramp up the vaccination drive, the government recently modified its vaccine policy to allow foreign developers and manufacturers entry in the Indian market. Earlier, every vaccine got approval only after a trial in India. This provision has been done away with to fast-track vaccine availability to Indians.

The Details are following during Second Phase.

31,331,202 (39,496 CASES) 415,721(3823 ACTIVE) 30,495,438 (35,124 RECOVERED) 420,043(541 DEATHS)

STATE	CASES	ACTIVE	RECOVERED	DEATHS
Andaman And Nicobar Islands	7,5254	172	7,3792	129
Arunachal Pradesh	45,188480	4,35741	40,619517	2124
Andhra Pradesh	1,947,4441,747	22,939632	1,911,2822,365	13,22314
Assam	555,8421,621	15,942263	534,8091,869	5,09115
Bihar	719,92985	5784	709,752100	9,599
Chandigarh	61,9171	331	61,0752	809
Chhattisgarh	980,204118	3,013219	964,050312	13,1411
Dadar Nagar Haveli	10,6336	725	10,5571	4
Delhi	1,435,77858	57312	1,410,16469	25,0411
Goa	170,27273	1,30769	165,839139	3,1263
Gujarat	824,48236	34525	814,06461	10,073
Himachal Pradesh	204,88787	91144	200,481129	3,4952
Haryana	769,70439	7632	759,32538	9,6163
Jharkhand	346,88539	2996	341,46445	5,122
J & K	320,40363	1,409104	314,620166	4,3741
Karnataka	2,891,6631,705	24,150568	2,831,1932,243	36,32030
Kerala	3,235,53317,518	135,7006319	3,083,96211,067	15,871132
Ladakh	10,11010	1103	9,9517	49

STATE	CASES	ACTIVE	RECOVERED	DEATHS
Lakshadweep	20,284	838	19,995	206
Meghalaya	59,904,558	4,539,126	54,356,411	1,00,921
Maharashtra	6,251,664,753	98,092,607	6,022,485,979	131,087,167
Manipur	90,262,1,284	9,939,456	78,872,1,725	1,45,115
Madhya Pradesh	788,021,111	16,313	777,394,24	10,464
Nagaland	27,11,692	2,008,14	24,57,177	5,371
Mizoram	30,283,847	7,451,561	22,701,287	1,311
Punjab	598,658,68	76,843	581,634,105	16,25,66
Odisha	963,851,1,917	17,217,196	941,204,2,044	5,43,069
Rajasthan	953,160,33	32,733	943,92,066	8,9,131
Puducherry	120,10,198	91,837	117,397,132	1,78,63
Sikkim	24,598,257	3,06,077	21,209,179	3,291
Telangana	640,012,643	9,729,128	626,505,767	3,77,84
Tripura	75,605,509	4,31,487	70,560,594	7,312
Tamil Nadu	2,544,442,1,830	24,816,699	2,485,764,2,516	33,86,224
Uttar Pradesh	1,708,114,57	99,434	1,684,37,286	22,7,485
West Bengal	1,522,037,842	12,089,116	1,491,895,942	18,05,316
Uttarakhand	341,640,11	6,61,747	327,664,58	7,35,92

Conclusion:

This paper was prepared with limited time in order to prioritize the present element and the speed of delivery of information from the literature review conducted during the pandemic. Further research can be carried out by deepening the impact of the benefits, effectiveness and success of the technology system used during the handling of a pandemic. Specific and detailed research can also be carried out by further exploring the use of technology for handling pandemics carried out in a particular region or country, so it is expected that research results can be utilized by stakeholders to take similar measures in accordance with the conditions to ensure successful handling of a pandemic.

The vaccination drive is gaining momentum and very soon the adult population will get vaccinated. Initially only people above the age of 45 were vaccinated but today the government had issued an ordinance stating all above the age of 18 years can get a jab of covaxin, or covishield or sputnik. People stand in long lines to get themselves vaccinated. The people will have to be more responsible in following the safety protocols and stay indoors to stop the spread of the virus. The government and the people will have to come together to fight this

pandemic. It is a battle that can be won but only with the combined efforts of the people and the government. There will soon be a new dawn where children can wake up and get ready for a new day in school.

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