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Opinion

COVID-19 Crisis in India: Threats and Opportunities

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Abstract

Covid-19 catastrophe in India during the first half of 2021 has been a matter of great concern for policy makers, health institutions and the government. A country of 1.4 billion has passed 29m Covid-19 infections and 351,300 deaths. India is likely to have more new cases per day from the beginning of August 2021. Strains of Concern and the Strains of Interest (new and emerging mutants have contributed to increased morbidity and mortality. Emergence of mucormycosis (black fungus) during the ongoing pandemic is a bigger challenge to India, Action on a war-footing is needed to save lives by expanding and upgrading healthcare facilities more so in rural areas. 233 million doses of the COVID vaccine have been given in India. More than 45 million people have received two doses of the vaccine (fully vaccinated). The third Phase of the vaccination has coincided with an acute vaccine supply shortage across the country. India's monthly COVID vaccine manufacturing capacity is about 60-65 million doses against the final requirement of 1.45 billion doses to cover 70 per cent adults. Investing in health is crucial. India's health system is overwhelmed. Hospitals are running out of oxygen supplies, ventilators and beds. It is a situation that needs a global approach. Tiding over a pandemic requires detailed preparation at multiple levels on the part of the State. Vaccination drive to cover all is crucial. Global partners have a responsibility to support India in mass production of vaccines. Developed economies must support the scale-up of lab testing and genomic sequencing of virus. Developed nations should also provide technical assistance, help India in training its health professionals and provide logistic support (oxygen canisters/concentrators/cylinders/ medications/PPEs, establishing/operationalising field hospitals/quarantine centres), strengthening surveillance systems, data management like accurate reporting of cases and deaths besides temporality taking out manufacturing of life-saving vaccines/drugs from India to other parts of the world during the crisis.

Keywords: COVID-19, Pandemic, Vaccine, SARS-CoV-2, ICU, Oxygen

Introduction

India is suffering the world's worst COVID-19 crisis. The small towns and the countryside are now affected, ripping through a fragile health system not equipped to deal with such a challenge. The daily infection rate is over 400,000 and the daily death toll, in excess of 4,000, is very likely an undercount. The health system has broken down, with scarcities in everything from hospital beds to oxygen.

Some seropositive surveys have been done, indicating that perhaps 20% to 30% of the overall population had been exposed. In large cities such as Mumbai and Delhi, in the areas that were surveyed, it appeared that 50% to 60% had been exposed. Decades of underinvestment in public health, with inadequate diagnostic capacity and programmatic agility, have created challenges in the implementation of test, trace, and treat strategies at scale.[1] The World Health Organization recommends sequencing about 0.3% of the confirmed cases, but India was much below that rate. By December 2020, India was only sequencing approximately 0.05%. But with the establishment of this sequencing consortium of ten labs, the rate has risen to about 1% since February 2021.

One of the critical errors India made was in vaccine procurement. In January 2021, the government ordered only 11 million doses from Serum Institute of India. Together, Serum Institute and Bharat Biotech can currently produce roughly 90–100 million doses in a month. But those firms also have export commitments, especially to the WHO's COVAX program.

How long it will take for the virus to become endemic depends on how much vaccine coverage we can get and how quickly, as well as how long protection lasts, what proportion of the population gets infected, and what kind of mutant viruses develop. Numbers have only continued to explode, and health infrastructure has collapsed,

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with oxygen shortages leading to deaths in hospitals. The weight of millions of active COVID cases and a severe shortage of logistics have exhausted health professionals. The horror of sweeping infections, severe disease, and staggering death rates have made state shutdowns a popular measure. The surge was brought about mainly by inappropriate messaging, massive political rallies, and large religious events.

India's relative success with the first wave likely led to a sense that vaccines could be rolled out slowly; additionally, the government is now in "emergency mode." India's overwhelming surge of coronavirus infections has revealed complacency and insensitivity after last year's first wave. India is suffering the world's worst outbreak of COVID-19 cases, with deaths hitting a record of more than 4,000 daily.

Economic Implications

The COVID-19 crisis in India has triggered a fresh wave of unemployment in the country. The unemployment rate reached a four-month high of 8% in April 2021 as job losses increased sharply due to localized curbs imposed by states that cost more than 7 million jobs compared to March, when the unemployment rate was 6.5%.

CMIE said that the unemployment outlook remains weak due to restrictions imposed to contain the unprecedented rise in COVID-19 cases. The impact of COVID-19 on various indicators of the economy would depend on how fast cases are contained. At the moment, the situation in India looks grim as the country continues to report over 350,000 cases and 3,400 deaths on a daily basis. CMIE data indicates that the impact of lockdowns has resulted in a higher rate of unemployment in urban areas. The unemployment rate in urban areas edged up to 9.78% in April, compared to 7.13% in rural areas.[2]

The rising wave of unemployment in the country could result in a dilemma for the government as cases continue to rise unabated. The labor force shrank by 1.1 million in April 2021 to 424.6 million compared to 425.8 million in March. In spite of this smaller labor force seeking employment, a greater proportion failed to find employment. As a result, the unemployment rate shot up from 6.5% in March to 8% in April. India's 63.4 million MSMEs, already battling low demand, are on the brink of forced shutdowns thanks to a second labor exodus, the high cost of inputs, and loan-repayment blues.[2]

Corona VirusDeaths Underreported

The real count of global deaths caused by the coronavirus is more than double the number officially reported, according to one analysis. Researchers at the University of Washington's Institute for Health Metrics and Evaluation analyzed excess mortality numbers and found about 6.9 million global fatalities from the virus.[3] Reasons why countries are underreporting coronavirus deaths include missing cases unintentionally as healthcare systems come under pressure and as well as of adequate testing to identify COVID-19-related deaths.

Variants vs. Vaccines

In December, scientists detected a new variant, known as B.1.617, in India, although it's not known whether this is driving the local outbreak, owing to a lack of genomic surveillance. There is a correlation, however, between the rising prevalence of variants and the surge in Indian case numbers. As Maharashtra saw the prevalence of B.1.617 rise, they also saw an outbreak. It is on the rise in Delhi, where people are also seeing an outbreak. These are very important epidemiological correlations. In Delhi and in northern India, another variantfirst identified in the UK and known as B.1.1.7-was more dominant than B.1.617. The B.1.1.7 variant is known to be more transmissible. As per the new directive of the WHO, the B.1.1.7 variant of concern initially identified in the United Kingdom is renamed "Alpha," instead of the "UK variant". The South African variant will be "Beta," and the B.1.617.2 variant discovered in India are called "Delta." Variant P.1, first detected in Brazil, will be referred to as "Gamma" under the new system.

Recent data showed that India's homegrown COVID-19 vaccine, COVAXIN, neutralized the B.1.617 variant, suggesting that vaccination may be effective against it. Other variants, first identified by scientists in South Africa and Brazil, are also believed to be more transmissible than the original strain and have already made their way into several other countries. Covishield is developed by the SII, Oxford University and AstraZeneca whereas Covaxin is developed by Bharat Biotech and ICMR. Covishield can be up to 90% effective and Covaxin has been found to be 78-81% effective.

More than 142 million people in the US and 33 million people aged 18 and over in the UK have received at least one dose of a COVID-19 vaccinearound 43% and 64% of the eligible population, respectively.[4] In contrast, around 16.94 million people in India had received at least one dose of the vaccine, as of May 9, the Indian health ministry reported. That's just over 8% of India's total population. Experts have blamed a slow vaccine rollout and shortage of supply for this poor showing. India would need to administer 10 million doses a day to vaccinate all adults within the next five to six monthsand that is assuming enough doses are available.5Funds should not be a constraint. At an assumed average price of INR 250 per dose, the cost of administering two doses to every one of the 70 crore adults will require INR 35,000 crore.

Consequences

For six of the seven days beginning on April 21, India set new global records for daily COVID-19 infections, repeatedly surpassing the 300,000-case record previously set by the US. India's total of confirmed casesmore than 18 millionare second only to that of the US. By official counts, more than 200,000 have now died, and over 3,000 are dying per day. The true daily death toll is at least two times higher, from a caseload likely at least ten times higher, based on modeling of data from the first wave.

India's total healthcare spending is a mere 3.5% of GDP, far lower than in other countries ranging from the world's wealthiest, like France (11.3%) and the UK (10%), to other emerging economies

like Brazil (9.5%) and South Africa (8.3%). Furthermore, only a third of India's healthcare spending comes from the government, with the rest mostly coming out of citizens' pockets. This effectively means that those who can afford to purchase health can have it, while citizens of lesser means must fend for themselves.[6]

For all those vulnerabilities, the current crisis could have been avoided if the government had acted earlier. The virus is the root cause of the crisis, but the extent of the crisis is due to so much more. It's equal parts complacency and insensitivity. Many Indians who took strict precautions last year abandoned their masks and gathered indoors when the broader public messaging implied that India had conquered the virus.

In the longer term, vaccinations are desperately needed to prevent a third wave. Only 9% of Indians have had at least one vaccine dose, and the current pace of vaccination is too slow. It's also not realistic for India to attempt to rapidly vaccinate 1 billion people. With limited vaccine supply, the most effective way to reduce transmission may be to target hot-spot areas and higher-risk peoplewhich means India needs better data, fast. For the "pharmacy of the world," which produced 60% of the vaccines for global use before the pandemic, supply was never going to be a problem. India already had the world's largest immunization program, delivering 390 million doses annually to protect against diseases like tuberculosis and measles, and an existing infrastructure that would have made COVID-19 vaccine distribution easier. In early January, India announced a goal to inoculate 300 million people by August.[7]

In rural areas, where most of India's population lives, most deaths occur outside the hospital, which can delay registration. "Among the deaths registered under the civil registration system, only 22% are medically certified nationally with cause of death. The Integrated Disease Surveillance System is collecting the data on deaths due to Covid-19 from testing laboratories and hospitals, but misses deaths due to COVID-19 among those who were not tested." Babu told *The Lancet* that "verification of data and detailed examination of the death numbers from several hospitals and field offices needs to be done." "From what has been reported, I think India definitely has the most infections in the world," says Ramanan Laxminarayan, director of the Washington, DC-based Center for Disease Dynamics, Economics and Policy.[7]

The reason is that even now, testing is only detecting a fraction of the cases that actually occur in India's massive population of 1.4 billion people. A serological survey conducted between August and September 2020, which measured the presence of the virus in a sample group of the Indian population, estimated that there were between 26 and 32 infections for every reported case of the virus. The first national SARS-CoV-2 serosurvey in India, done in May–June, 2020 among adults aged 18 years or older from 21 states, found a SARS-CoV-2 IgG antibody seroprevalence of 0.73% (95% CI 0.34–1.13). The study aimed to assess the more recent nationwide seroprevalence in the general population in India.[8]

For every 30 infections, only one was being picked up as a case, a similar disparity likely still exists noweven though India's testing capacity is higher than it was last yearbecause of the signs pointing to the fact that the virus is running rampant in the population. Experts argue that we need to apply the 30-fold undercount even now. Therefore, the real number of COVID-19 infections to date in India could be somewhere around 400 millionstill, that means a billion people are not infected. There is thus plenty of room for infection, even with many people already infected.

The number of confirmed COVID-19 deaths in India stands at just over 0.25 million, the second-highest in the world, behind the US. But those numbers may not tell the whole story. Even before the pandemic, as few as 21% of deaths in India were recorded by a medical professional along with a cause of death, according to the World Health Organization. India has almost one sixth of world's population, with an estimated 26 million births and 8 million deaths every year.[9] If we are undercounting cases by a factor of 30, is it possible that we are undercounting deaths as well. For 80% of deaths, we have no medically identified cause of death at any given time.

How the Pandemic is Reshaping India

India will have more cases than any other country in the world. With a population of 1.4 billion, there is plenty of room for exponential growth. The pandemic has already reshaped India beyond imagination. Its economy was faltering even before the lockdown, and the International Monetary Fund now predicts it will shrink by 4.5% this year. Many of the hundreds of millions of people lifted out of extreme poverty by decades of growth are now at risk in more ways than one. Gaps in India's welfare system meant millions of internal migrant workers were unable to receive government welfare payments or food. Hundreds died, and many more burned through the meager savings they had built up over years of work.

Now, with India's economy reopening even as the virus shows no sign of slowing, economists are worried about how fast India can recoverand what happens to the poorest in the meantime. "The best-case scenario is two years of very deep economic decline. "There are at least 100 million people just above the poverty line. All of them will fall below it.[10]

Although Indian policymakers have long been aware of the extent to which the economy relies on informal migrant labor, there are an estimated 40 million people who regularly travel within the country for work. Migrant labor a source of dynamism and an escalator for many people to escape poverty. In order to get that income improvement for the poor back, we must ensure that the social safety net works better for them.

The wide-scale economic disruption caused by the lockdown has disproportionately affected women. Because 95% employed women work in India's informal economy, many lost their jobs, even as the burden remained on them to take care of household responsibilities. Many signed up for India's rural employment scheme, which guarantees a set number of hours of unskilled manual labor. Others sold jewelry or took on debts to pay for meals. The COVID situation multiplied the burden on women both as economic earners and as caregivers. They are the frontline defenders of the family.

As COVID-19 moved from early hot spots in cities toward rural areas of the country where healthcare facilities are less well

equipped, public-health experts expressed concern, noting that India has only 0.55 hospital beds per 1,000 people, far below Brazil's 2.15 and the US's 2.80. Much of India's health infrastructure exists only in urban areas. As the pandemic unfolds, it is moving into states that have very low levels of testing and rural areas where the public-health infrastructure is weak.

Emergency Preparedness

India will need an extra 500,000 ICU beds, 200,000 nurses and 150,000 doctors in the next few months to respond to the challenge. At present, India has only 75,000 to 90,000 ICU beds and almost all are already occupied, when the second wave of the pandemic has not even reached its peak yet.

For every patient who tests positive, there are 5 to 10 people who are positive but not tested. That means over 2 million people are getting infected every day in India, even now. Statistically, 5% of the positive patients need an ICU bed, irrespective of their age. On average, a patient in ICU spends at least 10 days there. India needs to create at least 0.5 million additional ICU beds now.

Hospitals need nurses, doctors and paramedics in that order. India needs to produce at least 0.2 million nurses and at least 0.15 million doctors in the next few months who are dedicated to managing COVID for the next year. India has about 0.22 million nursing students who have finished their three-year nursing training course who are preparing for their exams. The government can consider these students as graduates and deploy them to work in COVID wards/ICU wards for one year. There are also 0.13 million young doctors today preparing for NEET examinations to get into post-graduate courses against 35,000 positions. Nearly 100,000 young doctors can be offered jobs to meet the immediate need. India must be prepared for the third wave.

Court Interventions

Courts have been proactive with their timely intervention, advising the government to safeguard the lives of India's people. On May 9, 2021, the Supreme Court of India convened an independent task force of experts on the COVID crisis to study and recommend, on a scientific and rational basis, the allocation of oxygen, medicines, medical resources and vaccines across the country. The government had failed us. During the course of hearing, it was suggested by the Court that an "expert body" involving national experts with experience in health institutions be set up as a National Task Force that will be responsible for providing public health responses based upon a scientific approach to the issues concerning the pandemic situation. It is necessary that an effective and transparent mechanism be set up within the Union Government for the purpose of allocating medical oxygen to all states and UTs for use during the COVID-19 pandemic. The Union Government has agreed to set up a National Task Force to streamline the process. This Task Force would be tasked inter alia with formulating a methodology for the scientific allocation of oxygen to the states and UTs.[11]

Concerns and Constraints

India's second coronavirus wave is rapidly sliding into a devastating crisis, with hospitals unbearably full, oxygen supplies running low, desperate people dying in line waiting to see doctorsand mounting evidence that the actual death toll is far higher than officially reported.

Last year, the World Health Organization advised that countries needed to get the positive test rate below 5% for at least two weeks before considering easing restrictions. The rate in India is now around 20%. A high percentage of positive tests suggests high infection rates and the likelihood that many more people in the community with coronavirus are going undetected. The Indian Council of Medical Research (ICMR) noted that 21.4% of the 28,589 peopleaged 18 years and abovesurveyed during the period showed evidence of past exposure to the coronavirus infection. 25.3% of children aged 10 to 17 years from the same number of surveyed populations have had the disease.[12] A large part of the population is still vulnerable to COVID-19.

We can cross-check under-reporting of infections directly with serosurveys carried out in India. The third serosurvey conducted by the Indian Council of Medical Research (from December 17, 2020 to January 8, 2021) reports that 21.5% of all Indians above the age of 18 have antibodies present that indicate past SARS-CoV-2 infection. Approximately 59% of India's 1.36 billion citizens are above the age of 18. This implies nearly 173 million adults infected. Factoring in the nearly 11 million COVID-19 cases reported by January 8 (assuming most cases are adults), this points to an implied under-reporting factor of roughly 16 for infections. In other words, only 6% of India's COVID-19 infections are reported. Hence, the issue of "missing infections" in India is undeniable and not contingent on a belief in the legitimacy of mathematical modelsit is evident based on figures released by the Indian government and institutions alone.

Preparedness for a Third Wave

Given the high levels at which this virus is circulating, India may see a third wave of the coronavirus pandemic. Vaccines will need to be updated to deal with new strains that have accelerated contagion in India, overwhelming hospitals and killing thousands. India must prepare for Phase 3, and surveillance is the priority of the hour.

The public health measures that work best are those that the people voluntarily adopt because they see them to be in their own best interests, drastically reducing transmission. A study found that countries where masks were widely used (either because of government orders or cultural norms) had lower per-capita mortality from COVID than countries where there was no universal masking. A smaller study of transmission among family members in Beijing households found that face masks were 79% effective in preventing transmission when they were used by all household members.[13]

A comprehensive review of the scientific evidence for the use of face masks, published in January of this year in the *Proceedings of the National Academy of Sciences* (PNAS), concluded that "near-universal adoption of nonmedical masks when out in public, in combination with complementary public health measures" could reduce community spread, provided the measures were sustained. Mask wearing by itself will not be enough: it must be part of a package of

measures that include rigorous social distancing, hand hygiene and avoiding mass gatherings.[14]

As stated above, the public health measures that work best are those that the public voluntarily adopts because they see it as being in their best interests. There is evidence from an experimental study in Bangladesh indicating that people will use masks enthusiastically if they are provided free, are comfortable, and accompanied by appropriate instructional materials. Mask usage tripled when masks were given away free and accompanied by well-designed instructional material, as well as reminders from religious and community leaders and volunteers.

Having volunteers in public spaces such as markets to remind people to wear masks and distribute masks to those who did not have them, as well as frequent messages from religious and community leaders, saw an increase in mask usage from 13%when none of these interventions existedto over 40% with them. One key to success was mask quality: masks needed to be comfortable to wear in hot and humid conditions, as well as being effective filters. Importantly, those who wore masks were also more likely to maintain social distancing.

Communication at the community level is the key to getting people to protect themselves this way. People need to be educated on the reasons for mask wearing as well as the proper way to wear a mask. Imaginative and creative communication campaigns are essential.

Conclusion

The situation arising out of Covid crisis is bad in the main cities, but also that it is worse in the poorer and rural areas where lack of healthcare resources and the availability of the vaccination programme have made those populations most vulnerable to the disease. B.1.617 is now being seen as three variants of interest, B.1.617.1, B.1.617.2 and B.1.617.3, the middle one of which officially became a variant of concern (VOC). This variant seems more transmissible than 'wild-type' SARS-CoV-2. In traumatised India, saving lives has become the highest priority to be achieved by vaccinating 70 per cent of the adult population or 654 million people. Hospitals across the country are running out of oxygen supplies, ventilators and beds. Politics has played and continues to play a big part in the spread of the virus but it is a situation that needs a global approach. India is likely to have over 1m new cases per day from the beginning of August 2021. Action on a war-footing is needed to save lives by expanding and upgrading healthcare facilities more so in rural areas. Vaccination drive to cover all is crucial. Vaccines have to be free of cost to all the people.

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Conflict of Interest

Authors declare that there is no conflict of interest.

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