

Covid-19 and Health Services

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A spherical particle of a diameter of 120 nanometres, the Novel Coronavirus (Covid-19) has proved to be a crisis of a magnitude quite disproportionate to its size. As on 8th April 2020, it has infected 1.4 million people and taken 82,133 lives all over the world. Its highly contagious nature has led to an exponential rise in the number of positive cases and fatalities. Not only did it increase the toll on the well-being of the people but also on the economy and the social fabric of various nations. Leaders from some of the most advanced economies have been rendered helpless with some succumbing to the disease while others to the challenges accompanying it. It is safe to say that the unpreparedness to a crisis of such proportion is the result of disregarding one of the most crucial elements to the effective functioning of any system: its health. According to the World Health Organisation's (WHO) World Health Report, globally in 2016, the mean proportion of total government expenditure from domestic sources devoted to health was 10.6%, varying from less than 2% in some countries to over 20% in others. That is not to say that the problem is just limited to lack of resources devoted to the healthcare sector. Unequal access to healthcare services is also a significant loophole in the healthcare policies. At least half of the world's 7.3 billion people are not receiving the essential health services they need. Further, an estimated 1.4% of the world's population fell below the poverty line as a result of out-of-pocket health care spending in 2010.¹ The crisis of Covid-19 has been an eye opener in many ways, the most important of which is the fact that the health of each member of the society impacts and is dependent over that of the other. One person carrying the disease had the potential to infect approximately 2.5 others. Therefore, mere introduction of effective health services is insufficient. What is important is to ensure their availability and access to every member of the society.

An effective healthcare system is associated with multiple benefits. Firstly, it is crucial for the happiness and well-being of the population. Secondly, it is necessary to maintain workforce productivity as healthy populations live longer and are more productive. Thirdly, it supports various sectors of the economy (e.g. manufacturing, insurance, transportation, information technology etc) by providing a market for their products and creating employment. Evidence presented by WHO's Commission on Macroeconomics and Health (CMH) suggests that each 10% improved life expectancy is associated with an increase of economic growth of about 0.3% to 0.4% per year other factors being equal.² However, despite its various advantages, the health sector has been ignored by different countries as other matters took precedence.

¹ World health statistics 2019: monitoring health for the SDGs, sustainable development goals. Geneva: World Health Organization; 2019. Licence: CC BY-NC-SA 3.0 IGO

² Key facts and findings on the linkages of health and development, <https://www.who.int/macrohealth/background/findings/en/>

Now, due to the requirement of hospitalisation of the severe cases, the Coronavirus poses the threat of overwhelming and destabilising the existing healthcare systems. These unprecedented circumstances call for development of a health policy with short, medium- and longer-term targets to be met along with greater investment in healthcare systems. Such measures would be viewed as bold and strong to prepare the healthcare sector to meet the potentially exponential rise in demand. The administration of these can restore the confidence in the economy and improve investor sentiment. This can be exemplified by the relative optimism in the international business community in Taiwan after its scrupulous management of the Covid-19 crisis. The 2020 Business Climate Survey of the American Chamber of Commerce in Taipei, conducted between mid-January and mid-February showed that 70% of respondents expressed confidence in Taiwan's prospects for solid economic growth when looking at a three-year timeframe.

More importantly, medicinal breakthroughs would be crucial to develop a sense of safety in the population to perform economic activities such as going back to work, resuming consumption, eating out etc. Thus, the saving of lives and of livelihoods need not be seen in isolation to each other. Rather efforts can be made to ensure that both the economy and human lives are safeguarded simultaneously. Increased focus on the healthcare sector in the process of providing stimulus to the economy can go a long way in achieving the aforementioned target.

Different countries have progressed through different post-outbreak trajectories. In these uncertain times, despite limited information on what future holds, it is important to picture the next normal with all available information. Countries that deliberately shape the next normal, rather than moving to the next stage haphazardly, will have greater success in saving both lives and livelihoods.³ This shaping of the new normal can use the experiences of other nations and establish as best practices -those that have worked for them. Using the idea of the new normal, governments must start developing a strategy with short, medium- and long-term targets for the facilitation of the healthcare industry. While, work on all three targets must begin simultaneously and immediately. The short- and medium-term targets would have to be met quickly. These would firstly involve containment efforts, followed by increased surveillance, introduction of a disease control system, strengthening of the healthcare staff, bolstering the healthcare infrastructure and development of a vaccine or treatment.

The containment efforts are required to slow the spread of the highly contagious virus so that the caseload per hospital and doctor can be controlled. According to a research by Imperial College London, there are two strategies to slow the spread of the disease, in order to help the health services cope. First is called Mitigation wherein, the focus is on the ill and vulnerable. They are isolated, tested and their contacts rigorously traced. Mitigation was observed to be capable of reducing the peak demand by two thirds in Britain. However, it was still capable of overwhelming the system. The second strategy is that of Suppression where an attempt is made to squash the disease out so that it dies down temporarily in the population. Social distancing imposed on the entire population and not just the symptomatic population is counted as a suppression strategy. The modelling used showed that this strategy could keep demand for critical care under maximum capacity. Given that Coronavirus can be carried by the asymptomatic patients and the symptoms of

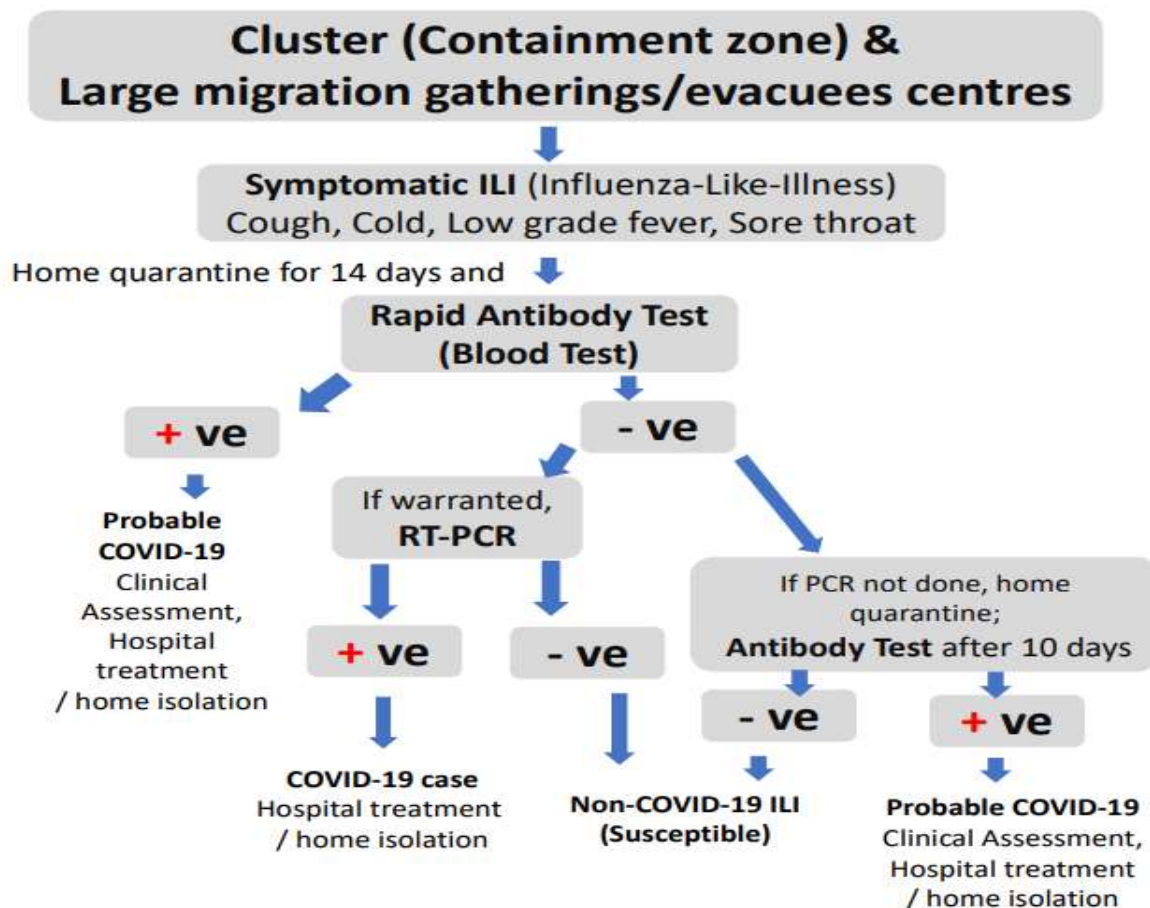
³ <https://www.mckinsey.com/industries/public-sector/our-insights/how-to-restart-national-economies-during-the-coronavirus-crisis>

the virus could take up to 2 weeks to develop, the suppression strategy is believed to be more effective in dealing with the outbreak. Irrespective of the strategy utilised, early action is crucial to determine the progress of the disease. Countries such as Singapore and Taiwan have been able to benefit due to their faster response to the Covid-19 crisis and their experience in handling a similar epidemic of SARS.

After having introduced measures to curb movement and social contact, it is important to build up robust surveillance systems. This implies introduction of a disease surveillance program that involves monitoring of symptoms in the population, widespread testing, follow up with the symptomatic or positive cases, contact tracing and development of a database of those quarantined, tested positive and recovered. Taiwan was quick to introduce measures that aided the containment of the disease and prevented its spread into the general community. These included screening incoming travellers for fever, mandatory self-quarantine for people who had recently travelled to affected parts of the world, establishment of neighbourhood warden systems that facilitated enforcement of the quarantines and ultimately executing border controls and travel bans. (Shapiro, 2020) Depending upon the stage of the development of the disease, countries can install thermal scanners in crowded areas if no lockdown has been implemented and test those running symptoms in public places such as malls, markets and offices. Information technology can also be used for monitoring positive cases and their contacts and ensuring the quarantines are being respected. Criminal charges against those who do not adhere to the quarantines could be pressed depending on the severity of the situation. Taiwan integrated the databases belonging to the National Health Insurance Administration, National Immigration Agency, and Customs Administration and used artificial intelligence and big data techniques to identify those at greatest risk through their travel and medical history. They monitored the symptoms of those subjected to high risk and accordingly isolated them and traced their contacts.

Another crucial element of a robust surveillance system is effective and widespread testing. It is required to reduce the fog of uncertainty about where the hotspots are and the extent of effort, equipment and workforce required to deal with the situation at hand. As director general of the World Health Organization Tedros Adhanom Ghebreyesus said, "Without testing, it's like moving blindfolded". In South Korea, close to 4 % of the population was tested. The country prioritised identifying and isolating people testing positive for the disease, and developed capacity to run about 15,000 diagnostic tests a day. Consequently, South Korea detected more asymptomatic but positive Coronavirus cases and this data proved invaluable because it provided a stark warning to the world that there are likely far more young and asymptomatic carriers of the coronavirus than were being tallied. The result was that South Korea was able to significantly flatten the curve, despite the initial explosive outbreak without having imposed any lockdown. Korea and Hubei province of China have comparable populations of 52 million and 58 million respectively. The number of people who died of the virus in Korea as on 8th April 2020 was 200 while that for Hubei was 3,212. Having recognised Korea's effective testing approach in managing the Coronavirus, it is also crucial to acknowledge that South Korea has significantly larger resources, capacity and know-how than many other developing countries. Countries like India, Indonesia and Pakistan for example have tested the lowest number of residents per million, according to official data. The WHO chief urged India to increase the ratio to 10 tests for each positive diagnosis, which means that while it should have tested at least 15,000 per million, it actually tested 60 people per million

population.⁴ However, it is important to understand that not only is the Polymerase Chain Reaction (PCR test) required- to detect Covid-19- expensive (Rs. 4,500) and associated with a higher turn-around time, but a number of lab technicians are not equipped in India to carry out the PCR test. There is however, a Rapid antibody test (serological test) which is easy to administer, less expensive (Rs. 300) and associated with a smaller turnaround time. It only needs a blood sample, where the blood goes into a cartridge alongside chemicals called buffers, and produces a reading. (Yadavar, 2020) India has hundreds of technicians who are already trained to take blood samples in labs, hospitals and from homes. Recognising that the Rapid Antibody Test could reduce the pressure on existing resources and establish hotspots that increase the spread of the disease, on 4th April 2020, the Indian Council of Medical Research advised rapid antibody blood test for Covid-19 in cases of Influenza Like Illness (ILI) in clusters and large gatherings. The Antibody Test can be used to narrow down the number of suspected cases over which the more expensive PCR test has to be conducted for confirmation of disease.



Source: ICMR Website

The ICMR had issued tenders for the procurement of 5 lakh antibody test kits in March and scores of companies, domestic and international, had queued up to provide rapid testing kits to India.⁵ India’s timely utilisation of alternative testing mechanisms in the absence of resources and technicians could establish a

⁴ <https://ourworldindata.org/grapher/full-list-cumulative-total-tests-per-million>

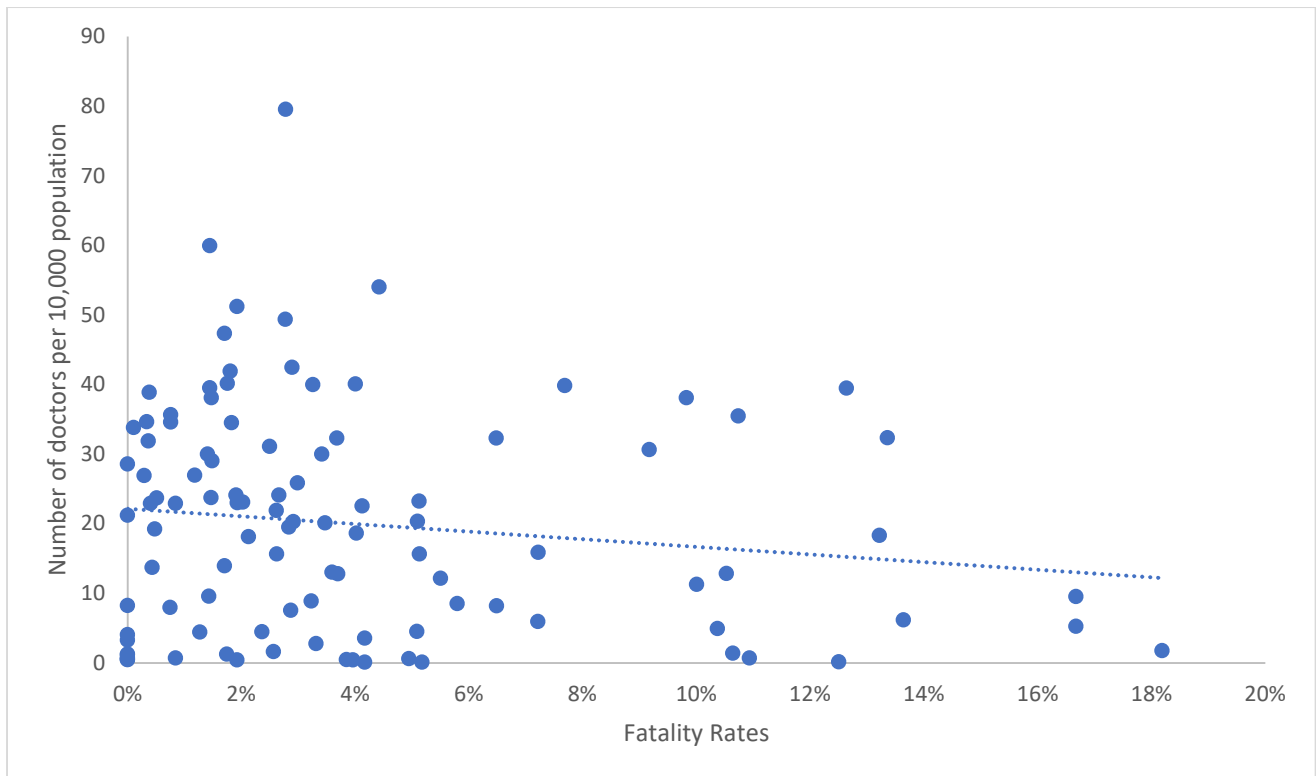
⁵ ICMR Circular

best practice for other developing states in dearth of resources to follow. These countries must also expedite the process of procuring these kits and increasing their in-house production to conduct widespread testing. This would provide a better picture of the extent of efforts and resources to be engaged to mitigate the crisis at hand. It would also help in finding red zones and improving isolation efforts.

The robust surveillance systems ensured by widespread testing and rigorous quarantine implementation would render support to reduce the caseload on hospitals and healthcare workers. The healthcare system, infrastructure and staff must nevertheless be prepared to handle the increasing caseload. A first step in this direction could be the establishment of a Disaster Relief Policy and a Disease Control Board. This Disease Control Board would be the independent authority to issue any advisory and guidelines related to the disease to not only the public and institutions but also the government. It would be responsible for quality control in equipment and testing, rationing of masks and protective gear and maintenance of supply chains for important medical equipment. It would also act as a watchdog for all important health institutions and ensure compliance and uniformity in quality standards. The purpose of establishment of a Disease Control Board is the eradication of red tapism in procedures since, the Coronavirus has a high contagion rate, it can only be countered by fast enough containment and testing procedures. Governments could slow the ferocious pace of the pandemic and the Disease Control Board would not have been required at all, if only the bureaucratic time was the same as virus time.

Having ensured limited caseload burden on the healthcare system and established a mechanism to take quick decisions in accordance with policy, the next step is to supplement the healthcare staff. Data for 2013–2018 show that almost 40% of all countries have fewer than 10 medical doctors per 10 000 people: 90% of low-income countries suffer from such shortages.⁶ Further, with an increase in demand due to the crisis, the impact of the shortage of medical workforce is only going to exacerbate the conditions. Italy faced such a shortage as its healthcare system was severely tested. The relationship between health workforce and fatality can be examined through the following figure. It plots the fatality rates as on 7th April 2020 against the doctors per 10,000 population in 104 WHO member countries. As can be seen there is a negative relationship between the number of doctors per 10,000 population and Covid fatality rate.

⁶ https://www.who.int/gho/health_workforce/doctors_density/en/



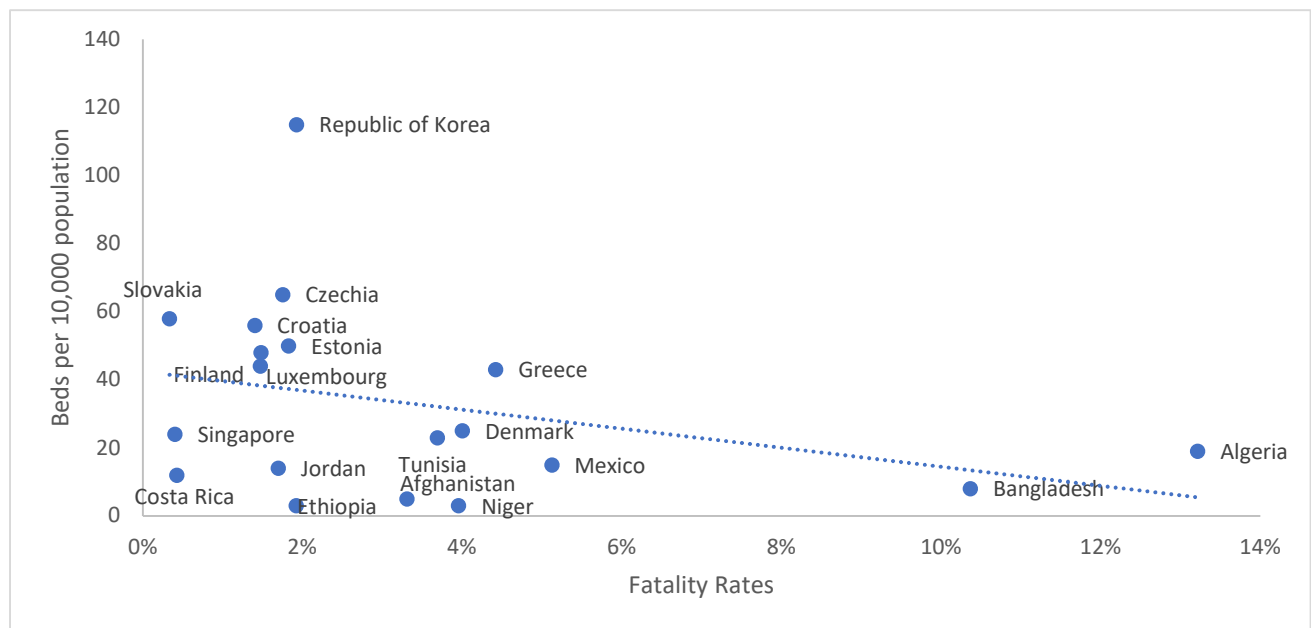
Countries like Vietnam and India have close to 8 doctors per 10,000 population whereas countries like Thailand, Bhutan and Bangladesh have close to 4 doctors per 10,000 population. Intensive care wards across Italy were about 3,000 doctors short even before the outbreak, according to their union. That a healthcare system like that of Italy with 39 doctors per 10,000 population got overwhelmed with demand, should be reason enough for these countries to immediately recruit additional medical workforce. They should urgently give licenses, even if they are temporary ones, to retired doctors and nurses and to final-year medical students allowing them to start working even before they have taken their final examinations. Volunteers will need to be drafted and quickly trained to do various other duties that makeshift hospitals will need when they are set up.

Not only should the medical workforce be strengthened by additional recruitments, but also through provision of appropriate incentives and assuring of workplace safety to those working. In this time of crisis, the healthcare jobs are equivalent to those of soldiers working on the frontline. Doctors with prolonged and repeated contact with Covid-19 patients, and especially surgeons performing invasive aerosol-generating procedures, are likely to experience a higher viral load. It is pertinent to assure them that they will be looked after by the system. In examining the 2014-2016 Ebola outbreak in West Africa, the World Health Organization found that healthcare workers were up to 32 times more likely to become infected than the general population; the degree of health-care worker infection — which ranged from 2% to more than 50% — depended largely on the preparedness of the facility receiving patients. Given their vulnerability to infection, the healthcare workers must be given the proper Personal Protective Equipment (PPE) to work in hospitals. This would not only ensure the safety of the healthcare workers but also that of the other patients and visitors to the hospital. In addition to the provision of PPE, proper sanitisation of equipment and hospitals must be carried out. Additional staff for the tasks related to waste management, sanitisation, water and food safety could also be recruited as per requirement.

For a smooth and effective flow of healthcare services and maintenance of the healthcare system during the pandemic, the policymakers should take lessons from the military morale. Morale, also known as esprit de

corps, is the capacity of a group's members to maintain belief in an institution or goal, particularly in the face of opposition or hardship. It is important in the military, because it improves unit cohesion. Without good morale, a force will be more likely to give up or surrender. Given that the healthcare workers will have to face severe circumstances in the face of the Covid-19 calamity, it is the responsibility of the leaders (political or administrative) to maintain their morale. Morale in the military is often highly dependent on soldier effectiveness, health, comfort, safety and belief-in-purpose, and therefore an army with good supply lines, sound air cover and a clear objective will typically possess, as a whole, better morale than one without.⁷ Similarly, a healthcare workforce with good supply lines of equipment and essentials, security and a clear chain of command and leadership that elicits a sense of duty, is likely to possess a better morale and in turn be more productive. In addition, they must also be provided a risk premium appropriate to their disease exposure along with accidental covers for family and themselves. Incentivisation for provision of a crucial essential service may encourage others to start service provision.

To provide availability of health services to all in order to stop the disease from spreading, health infrastructure must be built up. Such availability would ensure lower fatality rates and help save valuable human lives. Based on the data of beds per 10,000 population available for the 25 WHO member countries, the following graph shows a negative relationship between bed density and Covid-19 fatality rates. The countries with a larger bed availability per 10,000 population were associated with lower fatality rates.



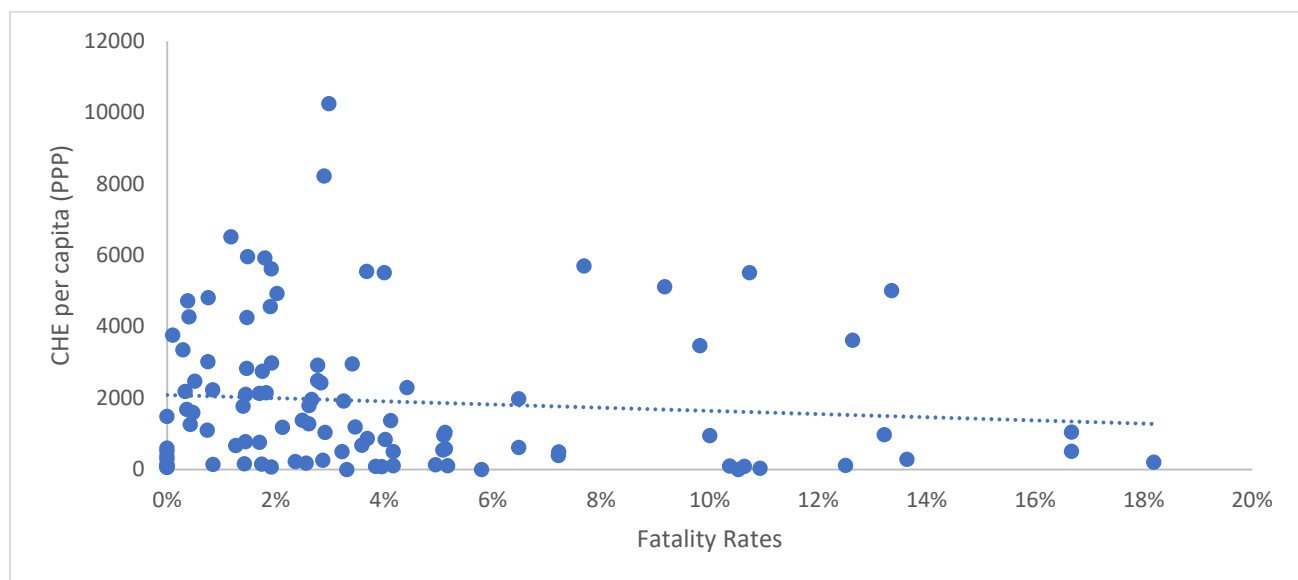
In the wake of the Coronavirus crisis, countries with the most established healthcare infrastructure were seen to be struggling in managing the demand. A report compiled by the Inspector General of Health and Human Services for a survey across the United States hospitals showed that the health-care workers were facing shortages of tests, masks, face shields, ventilators and staff.⁸ Doctors in Italy are being forced to make tough decisions on which patients will get ventilation machines or respirators.⁹ The countries that haven't had to face such situations must learn from the experience of the countries that were hit hard by the pandemic and prepare their healthcare infrastructure. This would involve arranging more ventilators, equipment, isolation wards and Intensive Care Units. In order to manage the caseload in hospitals and reduce the number of infections, technology should be used to provide online and tele-health consultations.

⁷ <https://en.wikipedia.org/wiki/Morale>

⁸ <https://www.washingtonpost.com/world/2020/04/06/coronavirus-latest-news/>

⁹ https://www.vice.com/en_us/article/k7ex4a/coronavirus-has-northern-italys-hospitals-on-the-brink-of-collapse

Particularly in countries like India where there is lack of education in the population, rural health practitioners (including the unqualified) could be used in the detection of the Covid-19 symptoms and reporting them to the relevant authorities. The entire exercise of flattening the curve is undertaken to limit the pressure on the healthcare infrastructure, particularly the intensive care units with ventilators. The decision makers must quickly increase the healthcare spending and prepare this infrastructure as there is only so much time, the economy would be able to handle the strict containment measures. The following graph highlights the relationship between Current Health Expenditure (CHE) per capita (PPP) and Covid fatality rates in different countries.



The trendline in the given graph is inconclusive about the relationship between healthcare expenditure as even the countries with relatively high CHE per capita were associated with significant fatality rates owing to their exposure and late detection. It is nevertheless important to increase healthcare spending immediately if all the aforementioned measures are to be taken to prepare the healthcare system for what is to come. The cost shouldn't matter, when with every passing month health systems are faster ahead of the peak of patients requiring critical care, we save lives and a trillion dollars in GDP.¹⁰

The containment, surveillance and preparation procedures would help achieve the short-term target of flattening the curve. The achievement of this target would be a milestone in this fight against Coronavirus. However, the journey would be far from over. The stopping of the virus would need development of an effective vaccine, if not immediately, then atleast in the near future. Though the development of a vaccine is a medium term target, the healthcare system cannot afford to divert its attention from it. There is only so much that even the most established healthcare systems are capable of enduring. Pharmaceutical firms however, have been neglecting the need to make new vaccines against viruses. The argument made for not investing in studying viruses was that the population develops immunity far too quickly for adequate returns on cures. There is a need for greater government investment in research and development for fighting viruses, not only by way of new vaccines but through developing treatment options. If we were even to find a medicine that improves the rate of recovery, it would imply faster vacancy of hospital beds and reduced load on the system. This would go a long way in managing the healthcare mechanisms.

Coming to the longer-term targets, increased investment in preventive healthcare, introduction of universal health system, improvement of infrastructure by introduction of technology and maintenance of healthcare

¹⁰ <https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/critical-care-capacity-the-number-to-watch-during-the-battle-of-covid-19>

database would all be needed to improve our preparedness. Without a major structural change, healthcare systems will continue to struggle to remain sustainable. The research and development activities need to be increased in the field of science and technology. Newer and more effective vaccines should be developed along with faster diagnostic capabilities. Seroepidemiology- the use of data on the prevalence of bio-markers of infection or vaccination- is a potentially powerful tool to understand the epidemiology of infection before vaccination and to monitor the effectiveness of a vaccination programme. It is crucial for better public health outcomes and disease containment. So seroepidemiological breakthroughs are going to be essential in avoiding future pandemics. On the information and technology front, the utmost priority of the long term should be the development of a disease surveillance system and database. The next time around, when such a calamity strikes, the availability of a proper database will ensure quicker tracking and faster implementation of key decisions. It would also ensure that experience from the current problem in terms of spread of disease and its consequences can be utilised to understand the resources required to deal with a similar crisis. Using this database, simulations can be run to find out the impact of an epidemic in the future and accordingly the system, staff and infrastructure can be built. These may include creation of a disease management system, maintenance of medical reserve corps and building of capacity to produce the required equipment in time. Further, Artificial intelligence (AI) has the potential to revolutionize healthcare to address some of the challenges listed above. It can improve the productivity and efficiency of care delivery, get life-saving treatments to market faster, help patients manage their care themselves, optimize bed management in hospitals, introduce online symptom checkers and virtual agents that can carry out tasks in hospitals etc. It can go a long way in helping countries stay ahead of the curve, specially in health care emergencies such as this one.

To conclude, in order to save livelihoods, we need to save lives first. Its likely that both these tasks are not mutually exclusive rather, a stimulus directed through building up of healthcare mechanisms may just be the answer. The ability of different countries to create mechanisms to deal with the immediate and long term challenges and introduce appropriate reforms shall determine the economic outcomes related to investor and consumer confidence in their economy. These reforms should divide their targets depending on their urgency.

The containment and surveillance of the disease in the short term could be implemented through mitigation or suppression strategies depending upon the stage of the spread of the disease that the country is at. A robust surveillance system that would include extensive testing and rigorous quarantine- to determine the extent of spread and consequent requirement of additional resources- should be established. While this is done to control the pressure on the healthcare mechanisms, simultaneous preparation to build up the healthcare staff and infrastructure should also be executed. To take quick decisions related to the execution of the aforementioned containment, surveillance and preparation measures, a Disease Control Board should be established. The development of better diagnostics, a vaccine and a faster cure should be simultaneously executed in a manner that we can expect to meet these targets in the medium term. This would reduce the existing pressure on the health system by ensuring that more people don't fall ill and those that do, are treated quickly.

Understanding that the potential harm that a pandemic causes both in terms of physical life and economic livelihoods, through the Coronavirus crisis, we now realise what is at stake and how underprepared we have been. Starting early could mean better preparedness for the future epidemics as was the case with Taiwan and Singapore. The focus on research and innovations would be crucial to our preparedness in dealing not only with natural disasters but also manmade ones such as bio-terrorism and use of bio-weaponry. The stronger a country's defense systems against these, the better the country's ability to protect its values and national interests against threats and crisis. The Coronavirus may just be a warning that something bigger and more devastating might follow and our preparedness for it would determine crucial outcomes related to

billions of lives and livelihoods. Given the small size of the coronavirus, it is ironic how it delivered a huge lesson in protection of national sovereignty and economic security.

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