COMMENTARY

COVID-19: What have we learnt, and plan for the future

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Abstract

Coronavirus disease (COVID-19) has spread like wildfire and affected almost every stratum of society. It has brought humans together and taught us to have compassion and collaboration among individuals, governments and organisations. Adequate protection of healthcare workers who are at the frontline must be taken care of. Good hygiene and social distancing go a long way in controlling an epidemic. We must strive towards building more balanced and sustainable models and healthcare systems in the future as we try to successfully emerge from this outbreak.

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Introduction

Coronavirus disease (COVID-19) is a new respiratory virus that was identified in Wuhan, China.[1] The source of COVID-19 has not yet been identified. Early in the outbreak, many patients allegedly had some link to a large seafood and animal market, suggesting the likelihood that the virus emerged from an animal source. The virus is highly contagious causing transmission between humans; hence prompt identification and isolation of infected individuals are paramount in preventing further transmission.[2]

Severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) are also caused by coronaviruses that 'jumped' from animals to humans. COVID-19 can cause mild to severe respiratory illness with symptoms like fever, breathing difficulty, cough and sore throat. Severe cases can lead to pneumonia.

The crisis caused by the COVID-19 has provided valuable insights into the state of the current international systems, including its capacity to deal with worldwide emergencies. It has shown how much we lack and how much we must do in this regard.[3]

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Comparison of COVID-19 with SARS and MERS

The COVID-19 is caused by a virus similar to severe acute respiratory syndrome-related coronavirus (SARS-CoV) that was identified in 2002 as the cause of severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome coronavirus (MERS-CoV) which was identified in 2012 as the cause of MERS. SARS was caused by zoonotic transmission of a novel coronavirus (likely from bats via palm civets) in markets of Guangdong Province, China. MERS was also caused by zoonotic transmission of a novel coronavirus (likely from bats via dromedary camels) in Saudi Arabia. These viral infections commonly present with fever and cough, which frequently lead to lower respiratory tract infection with increased morbidity in elderly and in those with underlying health conditions. SARS and MERS have a significantly higher case fatality rate than COVID-19. During the initial outbreak of COVID-19, public health officials incorporated methods that were used earlier to control the spread of SARS in 2002. This approach was based on the presence of similarities between the two pathogens, such as the same target receptors (ACE-2), droplet mode of transmission, similar radiological findings and preventive hygienic measures. The global response to the pandemic has shown us how global preparedness and responsiveness for such outbreaks have evolved since the SARS epidemic. Nevertheless, the course of the two epidemics has gone awry in entirely different paths despite the usage of related control interventions. SARS was brought under control in around eight months following infection of about 8,100 persons in restricted geographical areas while SARS-CoV-2 continues to have a global spread. This could be explained by the high level of viral shedding in the upper respiratory tract. Viral shedding has also been detected in the incubation period making it challenging to trace positive cases.

COVID-19 and Role of Universal Safety Precautions

Avoiding exposure to the organism is the best way to prevent infection. Proper hand-washing is the first and

most essential step in avoiding any infection. Hand-washing with soap and clean water for 20 seconds or using alcohol-based sanitizer (containing at least 70 percent alcohol) is recommended. Care should be taken to cover nose and mouth while coughing or sneezing to prevent the spread of droplets and reduce the chance of infection to others. Wearing of face mask not only reduces the chance of infection to those wearing the masks, but has also shown to reduce transmission of infection to others. Touching of mouth, nose, and face with unwashed hands should be avoided as much as possible. All these measures are of even greater importance when in public spaces such as hospitals, schools, and parks.[4] Social distancing with at least 1 meter (3 feet) and avoiding close interaction with individuals and groups is the most powerful tool we have to limit the spread of pandemic.[5] The government, with the help of media through their information campaign, along with the concern of coronavirus has helped in the rapid adoption of universal safety precautions by the public at a faster pace.

Preparedness of Government Bodies

Consequences of COVID-19 have prepared the government bodies around the globe in planning and executing various measures in better assisting their countries during the pandemic crisis. Many countries have executed obligatory social distancing measures in order to reduce and slow down transmission. Shielding measures have been used to protect vulnerable people (including children and elderly) who are at a high risk of acquiring severe COVID-19 illness owing to their underlying health condition by reducing all forms of interactivity among them and other individuals. People who have travelled from the virus stricken areas are screened with questionnaires detailing their travel history, contact with suspected persons, and presence of symptoms and checking of body temperature. Many governments have implemented mandatory social distancing measures to control the pandemic. They have announced city/nation-wide lockdowns, stay-at-home orders, and travel restrictions. Non-essential businesses, schools, and universities have been closed to reduce the risk of transmission. Some countries have marked the areas into red /orange and green zone according to the risk of transmission.[6] 'Quarantine' has been used for centuries to control pandemics like Spanish flu, and as recently for the SARS epidemic.[7,8] Quarantine involves keeping individuals under observation either at home or containment facilities as they might have been exposed to the infected person and involves confined movement before showing any symptoms. Quarantine flattens the curve of a pandemic, thereby avoiding a crash of the healthcare system due to a sudden increase in cases. Unfortunately, the effects of social distancing may take weeks to appear. Presently, no vaccine has been developed against COVID-19. They are only in the developmental stage. The trial started on humans on 16th March 2020. It is being accelerated and has bypassed animal testing due to the current predicament. However, it may take no less than 12 months before one is available.

Transparency

The government should take proper measures by educating the citizens about the disease, and should maintain transparency of the current situation in order to avoid panic and misinformation. The unexpected outbreak has shown the governments the strengths and weaknesses of its healthcare systems.[5] Media involvement can reduce unwanted concerns and panic in the public by helping them to understand the science and epidemiology of the disease.

It is very important for countries to share information and statistics to manage the disease effectively. There was widespread criticism of health organisations for the delay in sharing information about the emerging outbreak to allow countries to prepare and respond.

Investment in Health Care Infrastructure must be a Priority

An important lesson learned from COVID-19 is the need for outbreak preparedness to combat novel infections in a better way in the future and prevent any new pandemics all together. The coronavirus pandemic has shown us how inadequately funded our healthcare is. The inability to provide personal protective equipment (PPE) for frontline healthcare workers was one of the major challenges faced during the COVID pandemic. The stock of respirators, gowns, hand sanitizers, and surgical masks was found to be grossly inadequate. The limited availability of PPE not only increases the risk of infection among the healthcare staff, reducing the workforce available in an already thinly stretched healthcare system, but also severely affects their morale. The shortage of ICU beds and ventilators is another on-going challenge.

So what must be done to reduce the gap between the need and the availability of ventilators and PPE? We need better planned strategies. The production of PPE and ventilators should be ramped up, and adequate back up capacity should be ensured to increase the production several fold if and when the need arises. Backup plans should be in place so that unrelated industries like automobile industries and manufacturing industries can switch to the production of medical equipment and

ventilators at times of need. It is the duty of the government to prevent any stockpiling of PPE by unscrupulous elements and prevent a sudden hike in prices. An increase in healthcare expenditure as a percentage of the gross domestic product (GDP) is the need of the hour. Countries in Asia have some of the lowest per capita GDP expenditure in the world. As compared to USA, spending 17 percent of its GDP on healthcare countries in Asia spend much lower: Sri Lanka (3.8%), Pakistan (2.9%), and India (3.5%).[9] An increase in the number of ICU beds and hospital beds per 10,000 population also needs a rapid revamp. The role played by primary care and strengthening of the healthcare at the grass-root levels is equally important as primary care is closest to the people.

Protection of Health Care Workers

During a pandemic, medicine is at a critical point. Healthcare professionals are responding with an amazing exhibit of compassion and patient care in spite of intense personal risk to themselves and their family. The medical healthcare providers are also under a huge amount of caseload pressure, along with increased health expenditures. The enormous burden of COVID-19 illness could cause caregiver exhaustion. The major causes of psychological stress among healthcare workers are long work hours, sleep disturbances, worsening fatigue, and the risk of catching the infection and putting their family at risk. Physicians' exhaustion and shortage of healthcare workforce has serious repercussions for patients and could lead to a catastrophic collapse of the medical system.[10] The concept of 'forward triage' was intended for response to various types of crisis such as viral outbreaks and catastrophes. Forward triage is the process of deciding the patients' condition before they arrive in the emergency department. Direct-to-consumer telemedicine can help patients connect with their doctor at a distance.[11] This virtual programme could be used by those with smart phones or webcam-enabled computers/ laptops and allow physicians to successfully monitor patients with early signs of COVID-19 before they reach the hospital. As a result, this could lead to a considerable decrease in unwanted patients visit, encouraging self-quarantine and reducing emergency department wear out. Moreover, this approach provides distant monitoring of recently discharged patients, which is an essential step in controlling the outbreak. In addition, providing care from a distance can help in reducing the risk of clinicians' exposure to the infection.

Coordination

We need to be able to coordinate the global resources that are available in an outbreak and use them in a focussed manner based on priorities. There is a need for a committed and robust healthcare profession. There is also a need for better inter-governmental and intra governmental collaboration and coordination. Health cannot exist in isolation, but neither can society exist without health. This global coordination has been active in the coronavirus outbreak.

Plans for the Future (Table-1)

1) The two most important responsibilities during a pandemic like COVID-19 are to save people's lives and avoid it from occurring again. The first point is more critical, but the second has pivotal long-term repercussions. Global health experts have been reminding us of the challenges before us to improve our ability to fight outbreaks like 1918 Spanish flu.

2) National, state, and local governments and public health agencies should undertake steps to dampen the spread of the virus. Health systems of less privileged nations can break under the pressure of an overwhelming pathogen such as COVID-19. Richer countries can fund the needier African and South Asian countries, thereby saving precious lives and the subsequent global reach of the virus.

3) The world needs to expedite the development of treatment options and vaccines for COVID-19.

4) Adequate training and preparedness of healthcare

Table-1: Lessons learned from the coronavirus disease pandemic and plans for the future.

Lessons Learned So Far	Plans for the Future
COVID-19 is different from SARS and MERS	Increase allocation of funds into the healthcare GDP
Healthy hygienic practises should be ingrained in our routine day to day life and not just in times of a pandemic	Adequate training and preparedness of health care workers
Need for established systems with role of print and online media in educating and informing the public	Investment in disease surveillance and creating database
Need for strong primary healthcare systems which has reach to the grass root levels	Development of vaccine
Need for adherence to strict social distancing guidelines to avoid second wave	Increasing coordination between different countries in dealing with pandemics

COVID-19 = coronavirus disease; SARS = severe acute respiratory syndrome; MERS = Middle East respiratory syndrome; GDP = gross domestic product.

workers are required to monitor disease patterns, also working as part of the early warning systems that can help alert the world to future outbreaks.

5) We must invest in disease surveillance, creating case database that is easily accessible to relevant organisations, and rules calling for countries to adequately and correctly report cases.

6) There should be more allocation of funds into the healthcare GDP. Healthcare profession needs to be strengthened. The ratio of number of healthcare workers to population must be improved. The healthcare workers need more training with changes in curriculum that involves an emphasis on infectious diseases, microbiology and preventive and social medicine.

Beware of the Second Wave of COVID-19

Leung et al have reported their evaluation of the transmissibility and severity of COVID-19 during the first wave in four cities and ten provinces in China outside Hubei.[12] The study calculated the immediate transmissibility number in selected locations decreased considerably to a great extent after non-pharmaceutical control measures were implemented on Jan 23, 2020, and has since remained lower than 1. Their study brings into spotlight the combination of non-pharmaceutical interventions in China has the ability to contain transmission — not only of imported cases, but also the local transmission. They also explained the potential disadvantageous consequences of untimely relaxation of interventions, and found that such a decision might wreak havoc and cause the transmissibility to exceed 1 again, and thereby causing a second wave of new infections. The finding is analytical to governments globally, because it notifies against early relaxation of strict interventions.

Conclusion

The outbreak of COVID-19, a relatively new illness for mankind, has taught us many valuable lessons. The most critical lesson is 'prevention is better than cure'. We need to stress on investing in healthcare infrastructure, particularly primary care. With a vaccine still several months away, simple steps like social distancing and hand-washing are of utmost importance. The safety and interests of healthcare workers should be safeguarded as they are the main asset in our fight against pandemics. COVID-19 should be seen as an opportunity to improve our healthcare sector and most importantly, to prepare ourselves for emergency crises in the future.

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