COVID challenges: past, present & future

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Introduction

Pandemic, COVID-19, Social distancing has become a part of the vocabulary of even layman. A Pandemic is defined as an epidemic occurring worldwide or over a very wide area, crossing international boundaries and usually affecting many people. In its wildest form, the pandemic is taking the shape of a war against human nature, and there isn't a visible end as of date. In its full virulence, the way this pandemic has taken shape over the months and the kind of impacts it has got in the daily life of the common people and the treating doctors is something to ponder. In terms of physical health and, most importantly, the disease's impact on mental health is humongous. Looking into the effect of the disease on the social, physical, and mental health of the people in a country like India will help us formulate the measures to address the needs that may arise in the future, both in terms of health care facilities, economic benefits, social reforms in toto.

The Beginning: In December 2019, as the world was waiting to welcome a new year, a cluster of cases of unknown nature were found to take origin from Huanan Market, Wuhan, Hubei province of China, and was notified to the WHO. The WHO named it a novel coronavirus as it was similar to the SARS epidemic causing Coronavirus. On January 30, 2020, the WHO called it a Public Health Emergency of International Concern (PHEIC), and finally, on March 11, 2020, the WHO changed the nomenclature from PHEIC to the pandemic.

Initial Challenges: As is expected of any pandemic, 4 phases were expected for the COVID-19 pandemic which comprises of Phase 1: which included cases that were imported, Phase 2: the spread of the disease among close contacts; Phase 3: community spread without any history of contact with a case and Phase 4: a full-blown local epidemic. India, as a country, was looked upon for the way the disease seemed to be controlled effectively in the initial stages. Kerala became a prototype for disease management. Multiple theories, none of which had evidence, were put forward. The routine use of BCG vaccination, the endemicity of malaria, the existence of unhygienic conditions, the mutations of the SARS – CoV were among some of the theories laid to explain the lesser spread in India. As a generally effective strategy, social distancing, routine use of masks, complete nationwide lockdown were imposed. The economy faced a huge hit. The pandemic seemed to be affecting the social behavior and mental cool much more than its effect on physical health and mortality.

From the treatment point of view, multiple diagnostic and treatment protocols were debated upon. RT-PCR testing kits sensitivity issues triggered the need for clinical and imaging-based diagnostic needs. From what began with a screening at the airports with thermal scanners and RT-PCR in contacts, it was soon extended to include those presenting with symptoms and later on to test on a wider scale.

CT findings and SPO2 saturation were the keys to shortlist suspects and to categorize severity. Relevant CT findings included the presence of bilateral subpleural ground-glass opacities. The presence of reticular opacities, crazy pavement signs, consolidations, prominent vessel signs were commonly seen findings in CT imaging.

The categorization of the patients and observational studies unfolded certain findings regarding the occurrence of the disease commonly in males owing to the presence of a greater

number of ACE receptors in males, the greater prevalence and increased severity in middle-aged men with hypertension, diabetes, and obesity as comorbid was brought into the limelight.

Another widely debated topic was the use of steroids in the treatment strategy. Methylprednisolone at a low dose was started to be used in moderate cases to severe cases. In short, the use of methylprednisolone, owing to its higher lung penetration and its role in reducing the cytokine storm, was proven to show benefit in moderate and severe disease. Its role in mild or asymptomatic positive cases might prove detrimental. .The effectivity of prone ventilation, the need for limitation of physical activity, the possibility of the occurrence of thromboembolic events in COVID pneumonia were considered. Findings of improvement in saturation with prone position and low PEEP ventilation highlighted the possibility of Ventilation-perfusion mismatch as that occurring in ARDS.

There is a real concern with Tocilizumab regard to safety, in particular, superinfections and targeting a single cytokine such as IL-6 is unlikely to be beneficial, considering that it may not be the sole driver of the adaptive response. Time to administer Remdesivir was a big challenge, and decided to give at the early stage. Its administration may shorten the duration of illness. However, its impact on mortality and efficacy in severely ill patients remains unclear.

COVID-19 associated coagulopathy has several distinctive features compared to sepsis-induced coagulopathy and disseminated intravascular coagulation; raised D-dimer levels is a common finding with a mild increase in the prothrombin and activated partial thromboplastin time. The disproportionately high D-dimer levels in COVID-19 probably occur due to enhanced fibrinolytic activity in the lung, induced by the alveolar release of urokinase-type plasminogen activator (U-PA). Furthermore, viral entry into endothelial cells in the lung may trigger an upsurge of plasminogen activation. Considering the relatively high risk of thrombotic complications, the International Society on Thrombosis and Hemostasis (ISTH) and the American Society of Hematology (ASH) recommend that hospitalized COVID-19 patients should receive thromboprophylaxis. They suggest that therapeutic anticoagulation should be considered if indicated.

Historically, convalescent plasma has been extensively used for more than a century in many viral epidemics beginning with the Spanish flu of 1917–18. There has been increasing interest regarding its use in COVID-19. A large observational study evaluated 35,322 patients who received convalescent plasma in the US and territories revealed that transfusion within three days of diagnosis resulted in lower mortality at 7 and 30 days compared to transfusion at a later stage. The PLACID trial was an RCT conducted by the Indian Council of Medical Research (ICMR) to assess the efficacy of convalescent plasma among hospitalized patients with moderate illness, characterized by a PaO_2/FiO_2 ratio of 200–300 or respiratory rate > 24/min, and SpO_2 ≥93% on room air. No significant difference was observed in the composite endpoint of death or progression to the severe disease at 28 days.

The safety PPE kits, the availability of oxygen delivery facilities, the doctor-patient ratio, the fear of acquiring the infection, the mental agony of having to be isolated from family were among the other challenges that the front line workers were imposed upon.

Present Challenges: India has reported over 5.8 million confirmed cases as of September 25, 2020, of which 4.7 million patients have recovered, and 92000 have succumbed to the disease. India is still in the ascending phase of the curve, and the decline is nowhere in near sight.

New treatment modalities and observations were reported. The antivirals like Remedesivir, favipiravir, Lopinavir- Rituximab complex, hydroxychloroquine, anti-inflammatory agents like Tocilizumab, plasma therapy became

widespread. A major stumbling block has been to identify the optimal time of administration. Considering the lacunae in our current state of knowledge, it is nearly impossible to identify the point at which the host response spirals out of control to facilitate the effective timing of therapy.

Multisystem involvement of the covid -19 has shown it another face. The phenomenon of myocardial toxicity, acute kidney injury, the thromboembolic manifestations in the form of cerebrovascular manifestations were brought into notice. Chest physiotherapy was initiated as a measure to improve ventilation. The severe hypoxemia [Happy hypoxemia] with relatively little discomfort that is often observed in patients with COVID-19 pneumonia has intrigued clinicians. Hypoxemia is often out of proportion to the limited parenchymal involvement, as evident on CT imaging. Certain new phenomena like Orthodeoxia, platypnea in COVID affected individuals along with features of relative bradycardia in the early stages are being reported.

In terms of the general public consideration, people started moving out of confinement owing to the dwindling economy. The gap between the privileged and the underprivileged became very evident. This is near times can contribute to a new form of casteism in a country like India, but this time not in the form of the actual castes they were born into, but on the basis of the jobs and privilege.

For Health care providers: Minding, our mind is another biggest challenge. Remember that despite the present challenges and frustrations, taking care of those in need at a time of great uncertainty is a noble one. Build resilience through any method, whether physical, psychological, or spiritual, to help you face hard times. Resilience helps you bounce back from stressful situations. It helps you view difficulties as challenges and become proactive in response. Health care providers need to be realistic but stay positive: Practising self-care is important. Take care of yourself, eat healthy food, stay active, exercise regularly, and rest between shifts. De-stress in healthy ways and avoid smoking or drugs. When being at home, listen to calm music, connect with your loved ones, even if it is only through video-calls.

Future Insight: In terms of future outlook, the multisystem involvement of COVID might have a few repercussions. It has been shown in some studies that COVID affects a few organs like the heart, liver, lung, kidneys, brain, gastrointestinal system, and testes as well. The involvement of the testes may have reproductive complications, which will be evident only in the future. Studies have also shown the occurrence of post covid complications in the lungs in the form of fibrosis, consolidations, etc. Post thromboembolic complications in the form of pulmonary embolism, acute cerebrovascular complications have also been reported. Viral tropism for the pancreatic cells might contribute to worsening glycemic control and possibly new-onset diabetes. Once again, diabetes management in patients with Covid poses a great clinical challenge, and it requires an integrated team approach. We are going to witness a huge burden of diabetes in the years to come. The psychological impact of this pandemic is wide-ranging, substantial, and long-lasting. It has caused tremendous psychological problems in different subpopulations. The main challenge that awaits us in the near future is identifying and treating these post covid complications.

Adapting to the New Normal and let this new principle of social distancing and universal masking become a reality in our life. The issue facing each and every one of us is how we manage and react to the stressful situation unfolding so rapidly in our lives and communities. The further we look into the future, the more we can imagine how global society may well be reinvented by this pandemic. The experience from this public health emergency should guide governments and authorities on how to intervene in any future crisis around the world efficiently. Collectively, institutions must continue to build on this momentum to innovate, revise, and integrate outdated and fragmented infrastructure, and

rigorously evaluate the impact of these new care paradigms on Patient outcomes, satisfaction, and staff wellness.

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