

## Necessity to Prioritize Research Activities for a Better Public Health Response to Coronavirus Disease-2019 Pandemic

### Abstract

The Corona Virus Disease-2019 (COVID-19) pandemic has exposed the weaknesses in the public health care delivery system, and is extremely disheartening that thousands of people are losing their lives to a single disease. A single infectious disease is able to produce so much fear, uncertainty and disastrous impact predominantly because of its novelty and the fact that the many aspects of the disease are still not known. Even though, it has been proposed to strengthen multiple aspects of the disease control, but it is equally important to give immense priority to the research and development domain, as the findings of these results will reorganize the entire approach towards the disease. In conclusion, research and development is an important and integral component of the fight against the COVID-19 pandemic. It is high time that resources are pooled in and research activities are encouraged and accelerated to get answers for the unanswered aspects of this novel viral infection, which will aid all of us to mount an improved public health response against the first pandemic of the 21<sup>st</sup> century.

**Keywords:** COVID-19 pandemic, Research, World Health Organization

### Introduction

The Coronavirus Disease-2019 (COVID-19) pandemic has exposed the weaknesses in the public health-care delivery system, and it is extremely disheartening that thousands of people are losing their lives to a single disease and that too not in only one nation, but across the continents. It is very unusual to see that the major brunt of the disease is on high-income nations and that the condition is very critical with health systems being overwhelmed. The global tally stands at 2,160,207 cases, whereas 146,088 people have lost their lives to the novel viral infection.<sup>[1]</sup> As of now, the European region is the most affected one accounting for more than 50% share of the global caseload and 66.5% of the overall deaths.<sup>[1]</sup>

### Coronavirus Disease-2019 Infection: Public Health Measures

In order to ensure successful containment of the COVID-19 infection, the need of the hour is to strengthen the multiple aspects of the disease control (namely, an active search for cases, diagnosis,

isolation, treatment, quarantine, risk communication, contact tracing, infection prevention, and control, etc.) and intensify research activities.<sup>[2]</sup> Despite the implementation of these measures and gradual improvement in the outbreak readiness and emergency response action plan, the number of cases continued to rise at an alarming pace. Further, the rise in the incidence of the infection was simultaneously accompanied by death of the infected people and overwhelming of the health-care delivery system.<sup>[1,2]</sup> Thus, the public health authorities needed an additional time to improve their readiness, and thus, the decision to impose a complete lockdown was taken as the disease is being transmitted mainly by the close contact and through the droplets.<sup>[3]</sup>

### Intensifying Research Activities for Better Containment of Coronavirus Disease-2019

The COVID-19 infection is a novel viral infection and due to its ability for an

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international spread and sudden surge in the number of cases, the disease was able to produce fear, uncertainty, and disastrous impact among the different sections of the community. It won't be wrong to state that many aspects of the disease are still not known, including virological attributes, epidemiological determinants, and clinical spectrum of the disease.<sup>[2,4]</sup> Thus, it is extremely important to prioritize the domain of research and development domain, as the findings of these research are expected to bring about reforms in our approach toward the disease.

- Natural history, transmission, and diagnosis of the virus: On the virological front, there is a need to gain insights about the natural history of the virus, mode of transmission, development of animal models to understand the process of infection progression of disease transmission, improvement in the diagnostic tools to detect the virus or phenotypic tools to understand the mechanism of virus adaptation, and also understand the immune response to the infection and the developed immunity. The aspect of immunity needs to be checked as cases have been reported, wherein a single person has been reinfected for the second time<sup>[5,6]</sup>
- Animal and environmental research: It is also important to identify the potential animal host/s through which infection has originated, and how, it eventually came in contact with the humans and the predisposing social-behavioral-economic factors which facilitated the transmission from animals to humans. Any understanding of these aspects will aid the researchers to design and even test the strategies which can significantly minimize the risk of acquisition of infection<sup>[4,6]</sup>
- Epidemiological research: The epidemiological studies have a very special place in both the prevention and treatment of the COVID-19. These studies should be carried out to comprehend the details about transmission, incubation period, serial interval, potential environmental attributes, different modes of transmission, clinical spectrum of the disease, identification of high-risk groups, calculation of the case-fatality rate in different population groups, and finally, the implementation of which strategies aided in reducing the caseload or severity of the disease<sup>[4,7]</sup>
- Clinical management: A lot of research needs to be carried out to understand about the protocol to be adopted or clinical care, infection prevention, effectiveness of nonpharmaceutical interventions in improving the clinical outcomes, and for carrying out clinical trials to check for the efficacy of different therapeutic agents in curing the disease<sup>[5-7]</sup>
- Infection prevention and control: The next priority area for the research is the infection prevention and control, which essentially includes the safety of the health-care workers as these are our first line of

defence against the infection. The research domain includes the effectiveness of social restriction in reducing the chances of secondary transmission in the health and community settings and ways to enhance the effectiveness of personal-protective equipment in reducing the transmission<sup>[4,5]</sup>

- Research and development for candidate vaccine and drug: Subsequently, the research is needed for the development of potential therapeutic options for the treatment of disease through the development of animal models, conduction of clinical trials, and identification of the efficacy of drug.<sup>[4,5]</sup> In-fact, the World Health Organization has started a Solidarity Trial, wherein more than 90 nations are participating in the development of the combination therapy for the treatment of the infection.<sup>[8]</sup> On a similar note, for the prevention of the disease, lot of research is required for the development of candidate vaccines through the various stages of clinical trials and ascertaining the safety of the vaccine and its effectiveness in reducing the probability of acquiring the infection<sup>[4-6]</sup>
- Social attributes: Finally, research will also be required to understand the ways in which burden of the disease poses a physical and psychological impact on the health of the health-care professionals and identification of various factors which together enhances the probability of fear, anxiety, and discrimination among the local community.<sup>[5-7]</sup>

## Conclusion

In conclusion, research and development are an important and integral component of the fight against the COVID-19 pandemic. It is high time that resources are pooled in and research activities are encouraged and accelerated to get the answers for the unanswered aspects of this novel viral infection, which will aid all of us to mount an improved public health response to the disease in a time-bound manner.

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## Conflicts of interest

There are no conflicts of interest.

## References

1. World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report – 89; 2020. Available from: [https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200418-sitrep-89-covid-19.pdf?sfvrsn=3643dd38\\_2](https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200418-sitrep-89-covid-19.pdf?sfvrsn=3643dd38_2). [Last accessed on 2020 Apr 19].
2. World Health Organization. 2019 Novel Coronavirus (2019-nCoV): Strategic Preparedness and Response Plan. Geneva: WHO press; 2020. p. 1-20.
3. The Guardian. Boris Johnson Orders UK lockdown to be Enforced by Police; 2020. Available from: <https://www.theguardian.com/world/2020/mar/23/boris-johnson-orders-uk-lockdown-to-be-enforced-by-police>.

- [Last accessed on 2020 Apr 19].
4. Lake MA. What we know so far: COVID-19 current clinical knowledge and research. *Clin Med (Lond)* 2020;20:124-7.
  5. Yuen KS, Ye ZW, Fung SY, Chan CP, Jin DY. SARS-CoV-2 and COVID-19: The most important research questions. *Cell Biosci* 2020;10:40.
  6. World Health Organization. COVID 19 Public Health Emergency of International Concern (PHEIC)-Global Research and Innovation forum: Towards a Research Roadmap. Geneva: WHO press; 2020. p. 1-7.
  7. Xiang YT, Li W, Zhang Q, Jin Y, Rao WW, Zeng LN, *et al*. Timely research papers about COVID-19 in China. *Lancet* 2020;395:684-5.
  8. World Health Organization. “Solidarity” Clinical Trial for COVID-19 Treatments; 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19-treatments>. [Last accessed on 2020 Apr 19]