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Editorial

Be armed to tackle any Future global health crises like Covid-19 Pandemic

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Background

The COVID-19 pandemic represented an unprecedented global health crisis, challenging humanity's readiness to manage widespread infectious disease outbreaks. One of the most critical lessons drawn from this event is the imperative to strengthen preparedness measures, encompassing both clinical and social response mechanisms, to better confront future pandemics. Although the immediate crisis has been largely contained, this does not eliminate the possibility of future pandemics.

The initial outbreak of what would later be identified as COVID-19 was first reported by Chinese health authorities in late December 2019, when they alerted the World Health Organization (WHO) to a cluster of pneumonia cases of unknown origin in Wuhan City, Hubei Province, China. On January 7, 2020, a novel coronavirus—initially designated as 2019-nCoV—was isolated from a patient's throat swab [1]. The virus was subsequently renamed Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) by the Coronavirus Study Group[2], and the disease it caused was officially named Coronavirus Disease 2019 (COVID-19) by the WHO.

As of January 30, 2020, China had reported 7,736 confirmed cases and 12,167 suspected cases, while 82 confirmed cases had been recorded across 18 other countries [3,5].

During the early stages of the pandemic, attention was drawn to high-risk populations, particularly individuals with compromised immune systems. Psychological vulnerability and immunodeficiency were identified as contributing factors to more severe disease outcomes. Therefore, public health interventions emphasized the need to disseminate accurate, up-to-date health information regarding treatment protocols, local outbreak status, and preventive measures to vulnerable groups. These early actions demonstrated the necessity of real-time communication, surveillance, and global cooperation in managing future health emergencies.

Lessons from Previous Pandemics and India's Vigilance in Addressing

SARS-CoV-2: In April 2020, only a few months into the COVID-19 pandemic, a group of international public health experts outlined three critical lessons derived from the global HIV response that could inform strategies against COVID-19. These included: anticipating health inequalities, fostering an environment conducive to behavioral change, and adopting a multidisciplinary approach [4]. The World Health Organization (WHO) subsequently categorized countries into four epidemiological classifications based on the spread of COVID-19:No cases – regions without confirmed infections, Sporadic cases –

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areas with isolated cases either imported or locally acquired, Cluster of cases – countries experiencing concentrated outbreaks in specific locations or populations, and Community transmission – nations with sustained and widespread local transmission of the virus [5]

SARS-CoV-2, the causative agent of COVID-19, is classified as a novel Betacoronavirus that infects humans. It shares similarities with earlier coronaviruses such as SARS-CoV and MERS-CoV. Structurally, SARS-CoV-2 is an enveloped, positive-sense single-stranded RNA (+ssRNA) virus [6], capable of surviving on inanimate contact surfaces and environmental reservoirs for variable durations [7]. As our understanding of the virus evolves, new insights into its transmission and characteristics continue to emerge. For instance, one study estimated the average incubation period of SARS-CoV-2 to be approximately 5.2 days, with a 95% confidence interval ranging from 4.1 to 7.0 days [8].

With its potential to become endemic, SARS-CoV-2 is likely to exhibit seasonal peaks similar to other respiratory viruses. The virus's capacity for genetic mutation, especially changes in its surface epitopes, allows it to evade immune responses and adapt to hosts, including potential spillover from animal reservoirs. These characteristics underscore the necessity for robust and adaptive public health responses. Given that India is the second most populous country globally, it faces a heightened vulnerability to widespread outbreaks. Although governmental efforts have been commendable, public awareness and individual responsibility are critical components of disease control. The absence of effective surveillance mechanisms or delayed responses could create conditions conducive to the resurgence or evolution of new variants, leading to future epidemic or pandemic scenarios

Preparedness and Global Solidarity in Pandemic Response: The Case of India

India has demonstrated strong resilience and preparedness in managing global health crises, as evidenced during the COVID-19 pandemic. Over the past three years, the pandemic has not only disrupted socio-economic structures worldwide but has also intensified existing health disparities. As of May 12, 2023, the virus has infected approximately 672 million individuals globally and resulted in 6.8 million deaths. The rapid transmission of SARS-CoV-2 has underscored the necessity for nations to enhance disease surveillance mechanisms and to scale up public health emergency preparedness and response strategies. Global health security demands that high-income nations actively support low- and middle-income countries in building robust public health infrastructure. One of the critical shortcomings exposed by the pandemic was inadequate laboratory capacity. In response, the World Health Organization (WHO) and its partners have been working to fortify laboratory systems to better prepare for future outbreaks. Addressing future pandemics effectively will require sustained investment in strengthening healthcare systems, clinical laboratories, vaccination efforts, and community-based response frameworks. Collaboration between developed and developing nations is essential, particularly in the equitable distribution of vaccines and healthcare resources. India has emerged as a significant contributor in this regard, offering support through vaccine production and distribution while simultaneously enhancing its own national preparedness measures.

A comprehensive pandemic response strategy must prioritize coordinated efforts between public health institutions, government agencies, and the general population. Building mutual trust and ensuring timely, coordinated responses to emerging health threats are fundamental. Moreover, early detection of zoonotic pathogens—those originating in animal populations—can serve as a crucial preventative measure in reducing the risk of future pandemics.

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