



The re-emergence of COVID-19 in China is a big threat for the world: Associated risk factors and preventive measures

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Dear Editor,

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus was first detected in Wuhan, China in December 2019^[1]. As of 23 December 2022, more than 650 million confirmed cases and above 6.6 million deaths according to the WHO^[2]. The modified forms of the coronavirus have emerged regularly to create new waves of coronavirus disease 2019 (COVID-19) with a threat to the global healthcare systems. Alpha, Beta, Gamma, Delta, and Omicron variants were predominant in different waves of the ongoing COVID-19 pandemic due to the genetic mutation of the original SARS-CoV-2^[3]. The latest variant of concern (VOC) Omicron was initially identified in Botswana in late 2021. It quickly converted to becoming a dominant variant^[4–6]. The current circulating VOC Omicron has experienced roughly 50 mutations or more; its spike protein is known to have 26–35 amino acids which are dissimilar from its origin, SARS-CoV-2. Some of the Omicrons' variants consist of greater transmissibility^[7]. Health safety measures, vaccines, medications, and other therapies have tapered the prevalence, disease severity, and death rate of previous waves of the COVID-19 pandemic. However, the detection of recent SARS-CoV-2 Omicron subvariant BF.7 is again triggering the COVID fear across the world^[8]. Omicron subvariant BF.7 is suspected of being more deadly than its predecessors. No one knows how this new variant can be controlled but we know this new variant is much more dangerous than its antecedents. Scientists are suspecting that the BF.7 subvariant has more mutations in its spike protein compared with its parent version while developing strong infectious tendencies compared with its predecessors.

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Travel of SARS-CoV-2 from Alpha to Omicron and formation of BF.7 subvariant

The development of new SARS-CoV-2 variants followed a similar genetic mutation process. Researchers across the world monitor and evaluate the evolution of SARS-CoV-2 variants. The latest circulating VOC Omicron was created followed by Alpha, Beta, Gamma, and Delta variants^[3]. Also, the researchers address any precise change in viral genotype and phenotype. Initially, the Omicron variant was labeled under various subvariants such as BA.1, BA.2, BA.3, BA.4, and BA.5 along with a few hybrid variants. At present, the circulating sub-lineages of Omicron variants are BA.5, BA.4.6, BF.7, BA.2.75, and BA.4^[9]. The newly detected Omicron subvariant has been categorized as BF.7 which falls under the BA.5.2.1.7 sublineage of BA.5 due to its mutation of the spike protein. BF.7 was primarily found in Northwest China's Inner Mongolia Autonomous region. Although BF.7 is not unique to China, they have been dealing with it for a certain period. Even with all the challenges, the virus has been detected in other places as well. As of 28 December 2022, more than 90 countries have detected this new Omicron subvariant among their citizens^[10]. The spreading of this new COVID variant does not appear to be slowing down. It is believed that this exclusive virus strain would spread to the rest of the world more quickly than we assumed.

The new COVID-19 surge due to Omicron subvariant BF.7

As Omicron has evolved, the world has witnessed the emergence of new subvariants that have built the capacity to breach immunity strengthened by vaccination^[11]. The recent flareup of BF.7 has made headlines of another major outbreak in China and other nations like Japan, Korea, and the USA. Rallies have taken place across China in response to new COVID cases as the region has attempted to get its grip on the situation. The Chinese government has tried to place various restrictions that provided its citizens with the assumption that the end to zero-COVID may be near^[12]. However, that was not the case in these recent times. Despite lockdowns, conducting tests, and placing individuals under quarantine, China has witnessed a worst COVID situation than ever. An actual picture of the impact is difficult to measure, but the gravity of losing people within a short period can clarify a whole lot about the deadly virus^[13]. Recently, China's National Health Commission has discontinued sharing their daily statistics of COVID cases. Therefore, it is hard to get the actual situation of China's new COVID wave due to BF.7 subvariant. A British-based health information recorder, Airfinity, projected that China was undergoing over a million contagion cases and nearly

5000 deaths daily. Yet, a local official in Qingdao reported the city was witnessing an average of 500 000 daily new cases^[14]. Similarly, cases are fairly elevated in Japan as well; nearly 100 000 people have been testing positive daily. Next in line, citizens in South Korea have also been devastated by over 50 000 cases per day. The stats signify that regardless of China's pressure on its public. Both Japan and South Korea have managed to get a hold of the COVID situation better than China and may continue to do so unless some drastic changes are made. Some experts are suggesting that the COVID upsurge in China could peak around late January of 2023^[15].

What do we know about BF.7?

BF.7 variant is different from other Omicron variants because of its infectious nature. It consists of peplomer protein which is more contagious than its origin. The virus transmits rapidly and that makes it more lethal. According to a report, the BF.7 subvariant has 4.4-fold higher neutralization resistance than its parent variants (D614G). It is very likely to infect those who have been fully vaccinated which is extremely alarming for the scientists to combat this new COVID variant. The neutralization capacity of BQ.1.1 is 79% and XBB.1 is 52% whereas, for BF.7, it is expected to be 94%. This proves that BF.7 has more potency to infect and transmit among people^[16]. Vaccines currently in use have shown little or no effect against Omicron BQ.1.1, XBB.1, and BF.7 variants. Moreover, the newly detected Omicron subvariant BF.7 is also believed to have a R_0 (basic reproduction number) of 10–18.6. Research has shown that other Omicron subvariants have an average R_0 of 5.08, which is significantly lower than BF.7. Since BF.7 is known to transmit the virus to an average of 10–18.6, this sublineage of Omicron is considered more contagious than all its predecessors^[17]. Since it is a highly mutated variant and can infect people easily. Evidence suggests that this type of variant does not contain any unique signs or symptoms^[18]. Though it may be too early to tell, Omicron BF.7 subvariant has the opportunity to express similar symptoms as other subvariants of the Omicron lineage. Most cases entail fever, sore throat, and cough as the typical symptoms. Considering recent statistics, it can be assumed that Omicron BF.7 subvariant would infect a significant person worldwide within a short period to introduce a new wave. Even so, the precise effect of the mutational outline of the virus on vaccine and treatment effectiveness, and diagnostic exactness is still in the work^[19]. Coronavirus mortality reports an equal number of deaths precisely credited to the virus and its unintended influence, such as interruption to necessary medical requirements^[20]. Despite BF.7's immune-evasive characteristics, and rapid evolution in China, the variant appears fairly steady elsewhere. According to other countries' reports of infections and death toll, China is the hottest spot in the current situation.

Actionable items to fight new coronavirus variants

In the case of China, low levels of acquired immunity might play a vital role in the spread of infections. Thus, speedy vaccination would be highly recommended for everyone regardless of their backgrounds. Therefore, the global healthcare authorities should work together to reduce vaccine inequality. Also, they should take the initiatives to make quality vaccines available and

affordable for every people. They can support the poor and developing countries in the rapid rolling out of vaccination programs. Moreover, some medications have already been approved by the Food and Drug Administration such as remdesivir, molnupiravir, nirmatrelvir–ritonavir, and others. Maintaining social distancing, wearing a mask, avoiding gatherings, and living a clean/serene lifestyle are just some precautionary elements that people should consider. For future aspects, since the BF.7 variant is extremely altered and infectious, the virus will likely change further into other variants and quite possibly become stronger and deadlier. Thus, it is suggestive that the public is made aware of the dangers that are in existence so that people can thoroughly prepare for what's to come. Now, at this stage, the development of a newer and stronger virus may not be entirely preventable as the virus has shielded itself in multiple ways. However, people have the option to protect themselves and their loved ones by living a conscientious everyday life. Besides these current preventive and therapeutic measures,

Conclusion

The SARS-COV-2 Omicron subvariant BF.7 is once again triggering a pandemic alarm. However, the main concern is whether it is a threat to global public health. Although we have known and understood its nature and capability of transmission, it can be said that it is less virulent. Nonetheless, the Omicron variant is receiving global attention due to its development being three times more transmissible than its origin among individuals who've been vaccinated. It is also ideal to note that the virus has had a steady track record in most countries except China. Hence, there is no need for worry and instead, precaution, and vaccination should be considered along with a serene way of living.

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S.B. and M.F.K.: conceived the idea, performed data collection, and writing the initial draft of manuscript. M.S. and M.R.I.: conceived the idea, revised and edited the manuscript, and supervised the whole work.

Conflicts of interest disclosure

The authors declare that they have no financial conflict of interest with regard to the content of this report.

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