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Omicron variant (B.1.1.529) of SARS-CoV-2: Threat assessment and plan of action

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Dear Editor,

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has affected more than 0.26 billion people globally, with 5.2 million fatalities (Worldometer, <https://www.worldometers.info/coronavirus/>). The emergence of multiple variants of concern like Alpha (B.1.1.7), Beta (B.1.351), Gamma (P.1), Delta (B.1.617.2) and other variants; besides the Epsilon (B.1.427/B.1.1429), Zeta (P.2), Eta (B.1.525), Theta (P3), Iota (B.1.526) and Kappa (B.1.617.1), have contributed to the worldwide development of multiple waves of the formidable pandemic [1]. Apart from the control strategies lingering on the adoption of face masks, social distancing, hand hygiene and environmental disinfection [2], the global vaccination drive is in full swing with the universal aim to mitigate the subsequent waves of COVID-19 [3]. This correspondence article aims to highlight the threat assessment based on the currently available data on the epidemiology, transmission, disease severity and immunology, and outline the action plan as per the preventive protocols for the control of the Omicron variant of SARS-CoV-2.

The World Health Organization (WHO) on November 26, 2021 declared the recently discovered B.1.1.529 strain of COVID-19, first detected in South Africa, to be a variant of concern and renamed it Omicron [4]. The classification puts Omicron into the most-troubling category of COVID-19 variants, along with the globally-dominant Delta, plus its weaker rivals Alpha, Beta and Gamma. The first known confirmed B.1.1.529 infection was from a specimen collected on November 9, 2021 from South Africa and confirmed on November 24, 2021. Omicron has also been identified in other places such as Botswana, Belgium, Hong Kong and Israel. On November 27, 2021 two more cases were detected in the United Kingdom and were linked and connected to travel in South Africa. This variant has a large number of mutations, some of which are concerning, the WHO said, pointing to the worrying characteristics. Recently, Professor Tulio de Oliveira, the director of the Centre for Epidemic Response and Innovation in South Africa, mentioned in a press conference that the Omicron variant has 50 mutations and most of the mutations (more than 30 mutations) were

reported in the spike protein (S protein) of the SARS-CoV-2, which has been used as a key target for most of the available vaccines. Moreover, the receptor-binding domain (RBD), which interacts with angiotensin-converting enzyme 2 (ACE2) to gain entry into the host cell, has 10 mutations compared to just two for the Delta variant that swept the world. This proportion of mutations in the RBD of the Omicron variant of SARS-CoV-2 raises serious concerns amid the worldwide vaccination programs (BBC News, <https://www.bbc.co.uk/news/health-59418127>). Furthermore, the preliminary evidence suggests an increased risk of reinfection with this variant, as compared to other variants of concern. Also, some doubts have been raised by scientists on the vaccine effectiveness against the B.1.1.529 variant on the basis of some preliminary computational analysis. Computer modelling has provided some hints that B.1.1.529 could dodge cellular immunity conferred by the T cells (Nature News, <https://www.nature.com/articles/d41586-021-03552-w>). In addition, the diagnosis of COVID-19 by presently available PCR tests can be influenced as many scientists have reported that one of the three target genes is not detected (called S gene dropout or S gene target failure), which can therefore be used as a marker for this variant without doing a full genetic analysis [4]. Nevertheless, all these findings are preliminary and need to be confirmed in the coming weeks.

Many countries around the world have banned or restricted travel to and from South Africa and made a provision of 14 days quarantine for travellers arriving from Omicron infected places. As per the concerns raised by the UK Health Security Agency about the Omicron variant, the UK government has decided on November 25, 2021 that the six African countries would be placed on England's travel 'red list'. The travel restrictions should be considered seriously to protect the hard-earned immunity against SARS-CoV-2 by the national vaccination programmes of several nations. In addition, many nations, like England, might implement a Test and Trace programme to follow the persons who have recently spent time in one of the countries where cases of the Omicron variant have been detected [5].

The WHO has stated that it would take several weeks to complete studies on the Omicron to determine the changes in transmissibility,

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severity, or implications for COVID-19 vaccines, tests and treatments. On the other hand, the hospitals in South Africa have been continuously reporting a rise in younger COVID-19 patients (aged between 20 and 30 years) infected with this variant and exhibiting moderate to severe disease. However, about 65% of the cases of the variant are unvaccinated and the rest are mostly partially vaccinated. Also, it is essential to consider that South Africa has fully vaccinated only 35.37% of its adult population and has seen a fall in the rate of people initiating vaccination in the recent days, according to the data from the country's Department of Health [5]. Therefore, the high-income countries (HICs) should come forward to help such low-income countries (LICs) by donating COVID-19 vaccines, which would help these countries in achieving the mass vaccination quickly.

In conclusion, various nations have to take strict action to prevent the spread of the Omicron variant of SARS-CoV-2 by the implementation of strategies such as ban on international travel, enhanced genomic surveillance and sequencing to identify the strains. The WHO has already warned that a high number of mutations in the RBD of S-protein may allow the new Omicron variant to spread quickly and reboot the pandemic again if not controlled on time. However, the vaccine effectiveness against this newly emerged variant is still a question. Hence, stringent implementation of the preventive measures is a prerequisite in containing any potential consequences in the future.

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Data statement

The data in this correspondence article is not sensitive in nature and is accessible in the public domain. The data is therefore available and not of a confidential nature.

Declaration of competing interest

All authors report no conflicts of interest relevant to this article.

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