



## **SARS-COV-2 Variant Omicron – A Review**

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### **ABSTRACT**

*The variant Omicron spreads more easily than the original SARS-CoV-2 virus and the details of Omicron compared to Delta remains uncertain. Omicron infection can spread the virus to others despite of symptomatic or asymptomatic nor vaccinated. This review article on Omicron is a compilation of various information that are available from WHO and other literatures. Further research and trials has to be carried out to know in detail of Omicron surge.*

*Keywords:*SARS-COV-2, Variant, Omicron.

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### **INTRODUCTION**

WHO's (Technical Advisory Group) on November 2021 designated the SARS-CoV-2 variant B.1.1.529 a variant of concern (VOC) named it as Omicron. The variant Omicron was first reported to WHO from South Africa on November 2021. The first publicly available sequence of Omicron from a specimen collected on 11th November 2021. The number of cases of this variant appears to be increasing in all countries. Omicron has got number of spike mutations, some of which are concerning for their potential impact on the trajectory of the pandemic condition. Preliminary evidence suggests that there are more risk of re-infection with this variant, when compared to other variants of concern (VOCs). Currently SARS-CoV-2 PCR diagnostics methods are able to detect the Omicron variant. Several labs have reported that for one widely used PCR test, one of the three target genes is not detected (called S gene dropout or S gene target failure, SGTF) and this test can therefore be used as marker for this variant [1].

#### **Omicron- a variant of Concern (VOC):**

It is a new variant of SARS-CoV-2 called as B.1.1.529 or Omicron. This new variant has shown large number of mutations of more than 30 on its viral spike protein, which act as the key target of the immune response. Increased in infectivity and the sudden increase in number of positive cases in South Africa, World Health Organization has declared Omicron as a Variant of Concern (VoC) [2].

#### **Global risk assessment:**

Omicron's transmissibility, clinical presentation, severity of disease, Immune response and response to other available counter measures of varies diagnostics & therapeutics is not clear. Increasing in number of cases, regardless of a change in its severity, may in increased morbidity and mortality. The impact of Omicron on vulnerable populations would be substantial, particularly in highly populated countries with low vaccination coverage. The overall risk of the new variant of concern Omicron is considered to be very high. The global risk of Omicron remains very high overall, and further the potential immune escape and higher transmissibility would lead to severe consequences [2].

Currently, a total of 63 countries have been identified with Omicron cases various evidence from the epidemiological studies on reinfection, altered antigenic profile of the Omicron spike protein, immune failure and a likely reduction in vaccine efficacy and effectiveness against infection are also associated with Omicron[1].

#### **Laboratory Testing & Diagnosing methods to detect Omicron:**

The most accepted and commonly used method of diagnostic for SARS-CoV- 2 Variant is RT-PCR method. This method detects specific genes in the virus, such as Spike (S), Enveloped (E) and Nucleocapsid (N) etc

to confirm the presence of virus. However, in case of Omicron, as the S gene is totally mutated, some of the primers shows absence of the S gene. This particular S gene absence could be used as one of the diagnostic feature of Omicron. Finally, omicron variant genomic sequencing is required. WHO had recommended that national testing capacity, genomic sequencing capabilities should be appropriately planned for well in advance based on national testing strategy [1].

**Trends in S gene target failure:**

Finally, the weekly count of cases with S gene target failure (SGTF) was less than 150, making up less than 0.1% of all cases reported. Analyses of sequenced SGTF samples has indicated that more than 99% of these were Delta cases. In the most recent week of data the number of cases with SGTF has increased notably to 705(December 2021) [3].

**Retrospective sampling:**

Various study conducted retrospectively with available genomic sequences and S gene dropout data at various country level, with sample collection dates would help to trace out rise in cases.

**Prospective sampling:**

Positive RT-PCR samples should be sequenced to confirm presence of the Omicron. National testing strategies should be updated to include all available diagnostic tools for rapid testing reporting and effective decentralization of testing.

**COVID-19 Vaccination:**

Public health authorities should accelerate COVID-19 vaccination coverage in populations at high risk for serious disease and also the population who remain unvaccinated, Health care workers and older people who are at high risk of severe disease should be vaccinated initially. Vaccines are likely to have some effectiveness against Omicron, particularly for severe disease, even if the performance is reduced compared with other variants. The presence of multiple mutations of the spike protein in the receptor-binding domain suggests that Omicron may have immune evasion from antibody-mediated protection. Overall, further research is needed to prove the escape potential against vaccine- and infection-induced immunity [4].

**Public Health and Social Measures (PHSMs):**

The use of masks, social distancing, ventilation, crowd avoidance as well hand hygiene will reduce the transmission of SARS-CoV-2, even in the context of emerging variants. The use of established PHSMs to be adapted includes contact tracing, quarantine and isolation [1].

**Health care system in the present scenario:**

As part of preparedness activities while studies are ongoing to better understand the phenotypic characteristics of the new VOC, and in the anticipation of possible increase in COVID-19/case-load and associated pressure on the health system, countries are advised to ensure mitigation plans are in place to maintain essential health services, and necessary resources are in place to respond to potential surges [5-6].

**PRESENT SCENARIO**

At present WHO is coordinating with a large number of researchers around the world to better understand Omicron. Studies currently underway or underway shortly include assessments of transmissibility, severity of infection, effectiveness of vaccines and various diagnostic tests, and effectiveness of treatments. WHO encourages countries to contribute the collection and sharing of hospitalized patient data through the WHO COVID-19 Clinical Data Platform to rapidly compile clinical characteristics and patient outcomes. WHO's TAG-VE continues to monitor and evaluate the data as it becomes available and assess how mutations in Omicron alter the behaviour of the virus [7].

**CONCLUSION**

Following the guidelines of World Health Organization along with the individuals measures such as social distancing, hand hygiene, wearing masks, avoiding crowded places, getting vaccinated (if needed booster doses) may help to reduce the risk of COVID-19 variants Omicron infection in the community.

**CONFLICT OF INTEREST**

The authors declare that they have no conflict of interest.

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