



Covid-19 Vaccine Efficacy on Omicron Variant

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Editorial

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Editorial

The advent of coronavirus (CoV) in December 2019 shook our society, resulting in over five million fatalities globally over the previous two years [1]. As a preventative measure for this infectious and transmissible pandemic, physical and social isolation is essential. The original SARS-CoV-2 virus has numerous mutant variants. Because of its remarkable resemblance to SARS-CoV, the new CoV was first dubbed SARS-CoV-2 (2019-nCoV) but was eventually designated Coronavirus Disease-19, or COVID-19 [2,3]. At the moment, the most important variation is Omicron, commonly known as B.1.1.529. In early November 2021, Omicron was identified in South Africa and Botswana [4]. South African researchers were the first to detect it as a result of using genome sequencing to examine an alarming increase in cases. The fact that there are so many mutations is the most alarming element [5]. COVID-19 is the seventh CoV to be found infecting humans. Six previous CoVs strains were discovered to be capable of infecting humans before SARS-CoV-2. HCoV229E (229E), HCoV-OC43 (OC43), HCoV-NL63 (NL63), HCoV-HKU1 (HKU1), SARS-CoV, and MERS-CoV are all included in this category [6].

It was claimed right away that omicron is more hazardous and fatal than the previous ones, and that it spreads swiftly. It has now reached 57 countries, including Austria, Belgium, Denmark, Germany, Israel, and the United Kingdom, as well as African nations. This variant contains around 32 changes, some of which are annoying [7]. Nothing is known about its severity or transmissibility, and nothing can be determined just from sequence features [8]. HIV patients, according to the South African scientist who discovered omicron, may be responsible for Omicron variances [9]. The viral mutation's potential impact is based on previous strain mutations and lab test results. The virus infects the population by attaching itself to cells and infecting them with spike proteins. Fifteen of the 32 mutations collaborate with the spike proteins to

bind to specific antibodies as well as ACE-2 receptors [10].

On November 26, 2021, the World Health Organization (WHO) recognized B.1.1.529 or Omicron variant as a concern based on the opinion of the WHO's Technical Advisory Group on Virus Evolution. COVID-19's link to other SARS-CoV-2 variants, particularly the Delta form, is unknown [11]. It is uncertain if the Omicron type is more infectious or causes more severe symptoms. As the number of COVID-19-positive persons grows, several epidemiological studies are being conducted in South Africa, the first country to find the Omicron variant. There is presently no information on various Omicron-related symptoms in contrast to other COVID-19 variants. People who have already been infected with COVID-19 are more likely to get the disease with the Omicron-variant [12]. The continuous reverse-transcriptase polymerase-chain-reaction is used to identify Omicron variants (RT-PCR). Whether or not Recent research in England discovered that after 15 weeks of two doses of BNT162b2 (Pfizer) immunization, the vaccine efficiency was around 88.0 percent, however, there was no effect against the Omicron version after two doses of ChAdOx1 (AstraZeneca). The effectiveness of currently available therapy [13].

Among all SARS-CoV-2 variants, Omicron has by far the most mutations. There are 32 mutations in Spike protein, which is the essential viral component that defines the virus's infectivity and antigenicity. Furthermore, 15 of the 32 mutations are found directly at the Spike protein's receptor-binding domain (RBD). These alterations include practically all of the important mutations of the preceding version of concern (Alpha, Beta, Gamma, and Delta), including K417N, E484A, and N501Y, as well as additional known mutations that have been shown to alter the virus's sensitivity to neutralization by protective antibodies [14]. This discovery shows that FDA-approved monoclonal antibodies may be

less effective against the omicron variant [15]. It has been proposed that Spike's intricate mutations may allow immunity generated by past infection or vaccination to be lost, resulting in a significant number of breakthrough infections or re-infection with altered virus strains [16]. Omicron is a highly transmissible variation, with studies from South Africa and the United Kingdom finding doubling duration of 3.38 days (95 percent CI 3.18–3.61 days) and 2–2.5 days, respectively, with a basic reproduction number (R0) greater than 3. This feature explains the fast proliferation and displacement of the dominant delta variation [17].

Omicron has also been discovered in India, first in persons who had returned from vacations abroad and recently in those who had no prior travel experience. There has been a significant spike in cases in Mumbai and Delhi during the last few days [18].

Conflict of Interest

The author declares no conflict of interest.

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Ethical Approval

Not Required.

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