Prevalence and Pathogenicity of Omicron Variant

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ABSTRACT

The surge of the Omicron variant has been studied in overall India, Delhi and Mumbai. The increase in the percentage share of the Omicron strain in total registered cases resulted in a surge of daily new infections. The pathogenicity of Original, Delta, and Omicron variants has been compared using the data collected at the Max Healthcare network in India. The Omicron wave was the least severe of all three waves. The third Omicron wave did not cause much damage due to hybrid immunity generated in the population as a result of vaccination and previous SARS-CoV-2 infection. The low pathogenic nature of the Omicron virus is also the reason for the less severe illnesses the variant caused. Hospitalization during the Omicron wave was just 10% of the Delta wave. The percentage of patients who needed oxygen support was the least during the Omicron wave (23.4%) followed by the Original (63%) and the Delta variant (74%). The less severe nature of the Omicron wave gave the hope of recovering from the deadly devastating COVID-19 pandemic. The symptoms of “long COVID” patients have been compared during all three waves. Nearly the same number of the patients at 5.3% and 5.16% had health issues during Original and Omicron waves, respectively whereas during the Delta surge 5.9% of patients with “long COVID” had symptoms.

Keywords: Delta variant, Omicron variant, Omicron pathogenicity, Omicron prevalence and transmissibility, SARS-CoV-2 mutation.

I. INTRODUCTION

More transmissible sub-variants of Omicron, BA.4 and BA.5 are taking hold all around the globe. In Japan, these strains of the SARS-CoV-2 were detected at the Narita airport when the samples were taken from three immigrants who landed in the second half of April 2022 from Spain, South Africa, and Zambia. The strains were prevailing till now in South Africa, Europe, and the United States. They are more likely to spread faster than BA.2 and are currently the main prevailing variant in Japan. All three foreign nationals, however, were asymptomatic and were fully vaccinated. The study conducted in South Africa showed [1] that the effective reproduction number of BA.4 and BA.5 were 1.49 and 1.4 times higher than that of BA.1, respectively. BA.1, the original Omicron variant that
emerged in late 2021, has mutated to a number of subtypes BA.2, BA.3, BA.4 and BA.5. In the week of August 4-10, 2022, Japan logged more new novel coronavirus cases than anywhere in the world. In the current seventh wave of infection, the daily caseload registered in Japan reached the highest tally of 261,036 cases (August 19, 2022) with weekly cases of 1.5 million spanning over the above mentioned week [2]. In just one week, 1.5 million cases were reported. It took long 19 months to register the first one million cases since the first SARS-CoV-2 infection was detected in Japan. This surge is due to the Omicron sub-variant BA.5 which has recently overtaken other previous variants including the original Omicron variant BA.1. Currently, BA.5 is the dominant strain not only in Japan but in the entire world. The daily new baseline cases after peaking the sixth Omicron variant wave were about 15,000 cases reported in the Middle of June 2022. Cases started rising in the first week of July 2022 (July 6; 45,829 cases) due to the emergence of more infectious BA.5 sub-variant.

Out of over 200,000 SARS-CoV-2 samples submitted to an international virus data sharing platform between mid-June and mid-July, 2022 BA.5 had a 53.59% share in all omicron sequences whereas BA.4 and BA.2 had the share of 10.57% and 4.51%, respectively [3]. BA.4 and BA.5 mutations of the Omicron are more infectious than earlier Omicron strains and can evade the immunity generated by past infection and vaccination. The data collected in Tokyo showed that the effective reproduction number of BA.5 is about 1.27 times that of BA.2, a dominant sub-variant before BA.5. Effective reproduction number is the average number of secondary infections an infected individual spreads to others. Omicron transmissibility is higher than the Delta variant. Its generation time, the time between primary and secondary infection was estimated to be around two days compared to five days of the Delta. Currently, BA.5 has a 90% share of all the new infections reported in Japan. BA.5 will likely replace all other sub-variants of Omicron by the beginning of August 2022. Reference [4] and [5] at Case Western Reserve University (US) reported that the Omicron variant is 6-8 times more infectious than the Delta variant. The study compared the health outcomes of Omicron and Delta infected children below 5 years of age. The age group was still unvaccinated, and the previous infection rate was also low. The Omicron infected children had less risk of developing severe symptoms than those infected by the Delta variant. The children affected by the Omicron had a 16% lower risk for emergency unit visits and 85% less mechanical ventilation requirement than the Delta infected children. The hospitalization rate was 1.8% for the Omicron compared to 3.3% for Delta infected patients. The study concluded that though more children were infected with the Omicron compared to the Delta but the severity of the infection was low in the former than in the children who had the Delta variant infection. The data of over 22,772 children infected with the Omicron and more than 66,000 children infected with Delta were analyzed. The demographic analysis showed that the average children infected with Omicron were younger by 1.5 years of age compared to 1.7 years of Delta patients and the former cohort had less comorbidity. A large number of unvaccinated children were infected therefore, there is a need for medical follow up of the affected children to study the long-term (“long COVID”) effects of the infections on different organs of the patients.

A study compiled by Japan’s Health Ministry showed that around 10% of hospitalized novel coronavirus patients continued to suffer from “post COVID” symptoms a year after they were discharged. The most common lingering symptoms were reduced muscle strength (7.4%), difficulty in breathing (4.4%), lethargy (3.5%), lost or altered sense of smell (1.6%), and altered taste (1.0%) [6]. In CT scan 5.1% showed the lung effects after one year of being discharged from the hospitals. The percentage of individuals who visited medical facilities for illnesses stood at 9.8% after one year of leaving hospitals. Some people had multiple symptoms. The study included 693 hospitalized COVID-19 infected patients admitted to hospitals during the period September 2020-July 2021. The overall symptoms after the patients were discharged from hospitals decreased with time but some “post COVID” symptoms remained as described above.

It is believed [7] that people developing mild infections when infected with Omicron’s BA.5 variant which can be interpreted cautiously as the protective antibodies wane out at some point in time. Moreover, the emerging new variants may be good at evading the immunity developed by the previous infection. The Omicron sub-lineages BA.2.12.1, BA.4, and BA.5 escape the natural immunity to cause the reinfection especially generated by Omicron BA.1. The Omicron built immunity is not a strong vaccine. Since the large number of people getting re-infected, it has not been established with surety how long the natural immunity will last. The reinfection cases are not severe but there is a risk of developing “long COVID”. It is a big challenge the novel coronavirus has posed to health experts. The effectiveness of the booster shot to prevent the infection was studied at Nagasaki University (Japan) [8]. The protection rate against the virus was 36% for a two-dose regimen among the recipients below 65 years of age which jumped to 70% upon inoculating the booster shot. The data has justified the recommendation of the third vaccine dose amid the fast-spread Omicron variant. In the US, the new “bivalent” vaccine developed by Moderna that targets the Omicron variant has shown promising results. One month after the shot, the “bivalent” vaccine produces 1.75 times more neutralizing antibodies that target the Omicron variant and also work for the Original strain. The “bivalent” vaccine is believed to be the “lead candidate” for the fight against the novel coronavirus and possibly will be available in US for upcoming fall 2022 booster drive. The study conducted at Nagasaki University (Japan) examined the data of 5,169 patients who complained of COVID-like symptoms. The study covered 13 hospitals located in 10 prefectures between January and March 2022 when the Omicron wave hit the country. Out of the above patients, only 41% tested positive for the novel coronavirus. From the vaccination records of the infected patients, it was revealed that two-dose vaccination prevented infection in 36% of the people in cohort 16 to 64 years of age and 23.3% for 65 and above. Among the individuals who received a booster shot after a two-dose regimen, the vaccine effectiveness largely increased in preventing infection in 68.7% and 80.5% of the
individuals in the age group 16 to 64 and 65 and above, respectively. Japan has the advantage of vaccinating 60% of its population with a booster shot after the completion of a two-dose regimen as of June 9, 2022. The second booster shot is limited to individuals over 60 and those with comorbidities. The gap between the third and fourth booster shot is 5 months. On the vaccine development front in Japan, to catch up with other advanced countries the Japanese government established [9] in March 2022 the Strategic Center of Biomedical Advanced Vaccine Research and Development for Preparedness and Response (SCARDA) that aims to accelerate the COVID-19 vaccine research and development. Apart from the domestic demand, Japan is also aiming to contribute to the international community. The SCARDA organization will provide stable and long-term support to institutions and companies for the research and production of the modified version of vaccines that work against the current and emerging variants of the SARS-CoV-2 virus. References [10]-[14] have published the results of various serological surveys conducted in India. The percentage of the population who had the SARS-CoV-2 antibodies was measured. The high infection rate in the state of Kerala compared to the other states of India was explained by the newly established “health index theory” [15], [16]. The absence of a second COVID-19 wave in Dharavi slums (Mumbai, India) was [17] due to the development of mass immunity, 75% of residents had antibodies, against the virus. The viability of the SARS-CoV-2 virus and sanitization methods [18], initial attempts at vaccine development [19], and the application of supercomputer in prevention of infection and treatment [20] were reviewed in the articles mentioned. Vaccine breakthrough infections that occurred in India in HCWs [21] and the general population [22] have been discussed. The dynamics of the spread and severity of the Omicron variant have also been described [23], [24]. In the city of Sendai (Japan), a new Omicron subvariant has been identified which has genetic information of both the B.A.1 and B.A. 2 Omicron sub-lineages. Earlier, the XE sub-lineage which is also a combination of BA.1 and BA.2 was detected [25] during the screening at the airport on April 28, 2022. The pandemic has entered into third year. Apart from the daily new infections, the issue of the “long COVID” remained unaddressed as there are many unknowns about the disease. The symptoms are haunting COVID-19 patients for weeks and months after the onset of the infection. The scale of “long COVID” is huge and alarming. “Long COVID” also known as “long-haul COVID” or “post-COVID” condition is defined by the World Health Organization as the health issues among patients with a history of probable or confirmed coronavirus infection usually three months from the onset of COVID-19. The patients have symptoms that cannot be explained by an alternative diagnosis. In this research article, the rise of the Omicron variant in overall India, Mumbai, and Delhi has been studied for the period November 29, 2021 to February 21, 2022. The various hospital incidences and outcomes of all three waves the original Wuhan (Alpha, Beta, and Gamma), Delta and Omicron variants have been compared. The data of the “long COVID” collected in the US and Japan have also been analyzed.

II. METHODS

Genome sequencing of Delhi’s samples was conducted at three laboratories: Lok Nayak, the Institute of Liver and Biliary Sciences (ILBS), and the National Center for Disease Control (NCDC). Blood samples of COVID-19 patients collected in Mumbai were processed for genome sequencing under the supervision of Brihanmumbai Municipal Corporation (BMC) at Kasturba Hospital Laboratory and the National Institute of Virology (Pune). The genome sequencing data of overall India were those collected by Global Initiative on Sharing All Influenza Data GISAID available on “our world in data (SARS-CoV-19 variants)” website [26]. The pathogenicity (hospitalisation, ICU care, oxygen requirement, number of deaths) data of COVID-19 patients were those reported by Max Hospitals, India. Max Hospitals are privately run hospitals located in Delhi (National Capital Region), Mumbai, Dehradun, Mohali, and Bhatinda. The “long COVID” data used were those reported at Okayama University Hospital (Japan).

III. RESULTS AND DISCUSSION

A. The Surge of the Omicron Variant in India

Fig. 1 is the plot showing an increase in the % share of the Omicron variant and the % decrease in the Delta lineage reported in India as a function of time. The figure shows the % changes of other lineages as well. The data available in the GISAID database [26] was used to construct the plots. As of November 29, 2021, the % contribution of the Omicron lineage was a mere 0.35%, the dominant variant was Delta (96.41%), and the rest (3.24%) were the other variants (Alpha, Beta, Gamma). The % content of Omicron rose to 3.24% on December 13. The highly transmissible Omicron in an amount of 3.78% could not increase the caseload. Till December 27, the daily new infections registered were still the baseline cases (below 8,000) (Fig. 2). On December 28, the cases surged to 9,184 daily new infections [23]. The apparent surge was due to the higher Omicron prevalence of 39.9% reported on December 27. The daily new caseload further surged to a higher tally of 167,067 cases on January 10, 2022, as the Omicron became a dominant variant at 78.53% of the total cases reported on the above date. On February 7, the % share of the Omicron variant rose to a plateau at 97.12%. Though, the highest number of new infections (347,063) was registered on January 20, 2022, during the third wave in India. The time lag of more than two weeks between the date of the maximum number of cases recorded and the plateau of the Omicron variant % share reported was due to it took time to collect and process the samples for genome sequencing. The cases started dipping after January 21 (337,785) but the % Omicron share decreased slightly on February 21 (96.86%). The gap of about 4 weeks again between the date caseload showed a decrease and % share of Omicron dipped due to the time needed to collect and process the samples and report the results. The % share of other variants has not shown any noticeable change and remained in the range of 1.84%-6.15% except that the % share of other variants fell to an all-time lowest at 1.84% on February 7, 2022, as Omicron was the major variant (97.12%) on this date reducing the share of Delta (1.04%) variant as well to the
lowest. The fall in the contribution of both the Delta and the other variants was due to the dominance of the highly transmissible Omicron reported in the first week of February 2022.

![Graph showing increase of Omicron and decrease of Delta prevalence (%)](Fig1)

**Fig. 1. Increase of Omicron and decrease of Delta prevalence (%) with time registered in India and the Change in the % share of other variants.**

![Graph showing daily new infections in Delhi and Mumbai](Fig2)

**Fig. 2. Daily new infections (caseload) in Omicron wave recorded in India, Delhi, and Mumbai for December 20, 2021-February 21, 2022.**

**B. The surge of the Omicron Variant in Delhi and Mumbai**

Fig. 3 shows the increase in the % content of the Omicron variant and the decrease in the Delta and other variants as a function of time in the capital city of India, Delhi. The data used to construct the plots have been taken from our previously published article [23] and the reports mentioned therein. The first dates mentioned in the reports have been used as the data point for making the graphs. On the initial dates (December 1-31, 2021), the Omicron % share was only 28%, the rest 34% and 38% were the Delta and other lineages, respectively. The contribution of Omicron rose to 79% in the genome sequencing report of January 1-23, 2022 whereas the Delta and other lineages reduced to 13.7% and 7.3%, respectively. In the month of December 2021, out of total of 1,553 samples, 430 (28%) were identified to be of Omicron lineage, 533 (34%) had Delta lineage, and the rest 590 (38%) belonged to the other lineages [27]. In the last week of December, 38% [28] of total Delhi’s COVID-19 patients were found infected with the Omicron variant that caused a surge in new infections. The rest 31% of patients had Delta and 31% were infected by the other variants. Of 863 samples collected during the period December 25-31, 50% (433) samples had Omicron lineage, 34% (293) were of Delta and the remaining 16% (137) contained the other variants. In the period of January 1-3, 2022, out of 72 samples collected in Delhi, 47 (65.3%) [29] were found to be positive for Omicron lineage while 20 (27.7%) samples were infected with the Delta variant. Other variants were only 7%. The % share of the Omicron variant increased to become a dominant lineage in January 2022 in Delhi as 4 out of 5 COVID-19 cases reported were due to the Omicron lineage. The Delta variant was reduced to only a few cases. Till January 23, the distribution of various strains was as follows. Out of 2,503 samples, 1,978 (79%) [30] were of the Omicron variant, 343 (13.7%) were of Delta lineage, and the rest 192 (7.27%) cases had other variants. In December 2021, the presence of the Omicron variant was at 28%. This large % share of Omicron caused the fifth pandemic wave in Delhi in December. The daily new infections surged above 100 cases after December 21 [23]. Till December 20, the daily new infections were at the baseline cases (below 91) registered when the fourth wave receded in Delhi. The tally of 102 and 125 new infections was recorded on 21 and 22 December, respectively. The above surge was due to a high share of Omicron at 38% reported during December 21-28. Further increasing the Omicron share to 50% during December 25-31 caused the caseload to increase to 1,796 new cases reported on December 31. The surge in new infections continued till January 13, 2022. As of this date, the new infections of 28,867 cases were reported due to which in the month of January the Omicron contribution rose to 79%. On January 13, the daily new infections peaked after that a decline in the cases was reported with 24,383 new cases recorded on January 14 [23]. A total of 626 Delhi’s COVID-19 samples analyzed till February 22, 2022 had 92% Omicron variant [30], 2% had the Delta and 6% were of other variants. In January 2022, the samples of the patients who died due to COVID-19 related disease in Delhi were tested and it was revealed that 92% had the Omicron variant. Out of 98 samples, 90 were detected with the Omicron variant [31]. Another data revealed [32] that 97% of the samples taken from those who succumbed to COVID-19 in Delhi during the period January to March 2022 had the omicron variants. Out of 578 samples collected from the deceased, 560 were from the Omicron lineage of the virus. The remaining 3% (18) had other variants including Delta. Sample analysis done in March 2022 showed that overall, all the 504 samples analyzed in Delhi had the Omicron variant of the virus [32]. The highly transmissible Omicron lineage presence at 79% share in Delhi’s population was enough to cause the maximum surge in new infections. After the plateau of the daily caseload reached, the increase in the Omicron shares from 97% to 100% did not cause a further jump in the new infection in Delhi. Thus, cases started decreasing from January 14 onward. The rise of the Omicron variant and decrease in Delta and other variants as a function of time (days) has been shown in Fig. 4 as reported in Mumbai. The data of the sero surveys (6th-10th) conducted by the BMC (Brihanmumbai Municipal Corporation) have been used [33]. The spread of the Omicron variant was fast in the initial days. In two weeks, from a 2% share reported on December 13, 2021, the...
Omicron variant rose to 55% till December 27, 2021. In the next four weeks, the contribution of the Omicron increased to 89% registered on January 24, 2022. The transmission of the virus afterwards slowed down. The results of the 9th survey (February 14, 2022) showed a 94.7% share of the Omicron whereas the results of the March 3 survey reported that Omicron has completely (100% share) replaced the Delta and other variants. The Omicron variant from a mere 2% share became 100% prevalent replacing all the lineages [24] including the Delta in 80 days. A small 2% prevalence of the Omicron in Mumbai as reported on December 13 could not increase the daily new infections. On December 20, 191 new cases were reported [23] which were the baseline cases recorded when the second Delta wave receded. The apparent surge with 312 new cases occurred only after December 21. The surge in the cases became more apparent after December 28 (1,333 cases) due to the spread of the Omicron to a greater extent at 55% of the total cases reported on 27th December. On January 7, the caseload reached the plateau with 20,971 new daily infections. The result of the 8th round (January 24) of genome sequencing done in Mumbai found that the Omicron variant was the dominant strain with the % share at 89%. After January 8, the cases declined to 20,318 new cases. The flattening of the caseload bar plot occurred around January 7-8, 2022 [23] reflected in the February 14 and March 3 surveys as the Omicron % was reported at 94.7% and 100%, respectively, the highest percentage share on these dates.

Bars in Fig. 6 compare the number of hospitalized COVID-19 patients who needed oxygen support during the treatment. The percentage of the patients who needed oxygen support was least during the Omicron wave (23.4%) followed by the original (63%) and Delta variant (74%). The Omicron was the least severe as it did not affect the lungs much as compared with the original and the Delta variant. The Delta variant was more damaging to the lungs among all the three variants that created the Oxygen supply crisis in India during the Delta wave. A significant observation was that reported by Max Hospitals, the number of patients treated under ICU during the Omicron wave was the highest among all three waves (Fig. 7). The reason for more ICU care patients admitted to the hospitals during the Omicron wave was that Max Hospitals network gave tertiary and quaternary care to the patients affected by the COVID-19 virus. Fig. 8 shows that in comparison to the Delta and original waves, the mortalities during the Omicron wave have dropped. The low mortality rate during the Omicron wave shows that the SARS-CoV-2 vaccine worked against the Omicron variant as a large population was vaccinated by the time the Omicron strain emerged. It protected the patients against developing severe symptoms and death. Also, the antibodies generated by the previous infections worked as a shield against the Omicron infection. In Max Hospitals network, out of 82 deaths, 60% were those partially or unvaccinated patients. Because of the mild nature of the Omicron variant, governments and health officials around the globe have focused on home isolation protocol for COVID-19 positive patients [34]. In another

C. Comparison of the Severity of the original (Alpha, Beta, and Gamma), Delta, and Omicron variants

The data collected by Max Healthcare (India) [34], a network of 17 hospitals, revealed that the third Omicron variant wave in India caused less severe symptoms of the SARS-CoV-2 virus. The hospitalization rate during the third wave (Omicron variant) was about 10% of the second wave (Delta variant). It was due to the vaccination and inherent mild nature of the Omicron variant. Fig. 5 compares the number of COVID-19 patients hospitalized at Max Hospitals. The total number of patients hospitalized during the original (March 2020-Jan 2021), Delta (March-June 2021), and Omicron variant (December 2021-January 2022) waves were 20,883, 12,444, and 1,378, respectively.

Fig. 5. Comparison of COVID-19 hospitalizations at India’s Max Hospitals during three waves.
observation, it was noticed that the overall number of hospitalization in government-run hospitals was relatively less compared to the privately run hospitals like Max Hospitals due to the number of patients with critical conditions being more in these hospitals.

D. Comparison of the Severity of original, Delta, and Omicron Variants among “Long COVID” Patients in Japan

The bars in Fig. 9 compare the symptoms of COVID-19 patients during the three waves (original, Delta, and Omicron variants) that hit Japan. The data were compiled by Otsuka [35] at the Okayama University Hospital (Japan). A total of 281 “long COVID” patients’ hospital records were analyzed. The data showed the % of individuals who faced health issues during the original strain and Omicron were nearly the same at 5.3% and 5.16%, respectively. On the other hand, the Delta variant affected the individuals on an average of 5.9%. The reported trend of the symptoms showed that fatigue was the most common health issue among “long COVID” patients in all three waves whereas mild fever was the least common symptom. Fig. 10 was constructed from Fig. 9 to show the percentage of overall symptoms reported in all three waves. The most common symptom reported was fatigue up to 16.9% followed by smell and taste disorder with 9.2% each.

Headaches and breathing issues were observed in 6.7% and 6.2% of patients, respectively. Hair loss was reported in 5.9% of patients. Insomnia and coughing were seen in 4.2% and 3.6% of patients, respectively. A small percentage of the patients complained of dizziness (2.3%), heart palpitations (2%), concentration issues (1.7%), and chest pain (1.8%). Mild fever was noticed among 1.4% of the patients. Another trend that emerged from the study done by Otsuka, is that patients did not suffer from severe symptoms during the acute phase of the coronavirus infection. Of 281 people, 70% were those who rested at home or hotel after testing positive while another 17% were hospitalized but were not serious enough who required oxygen therapy. The remaining 13% received oxygen during their hospitalization.
E. The CDC (US) and Japan’s Health Ministry Data of “long COVID”

The US CDC (Centers for Disease Control and Prevention) analyzed the data of two million people and found that 20% of COVID-19 patients below the age of 65 and 25% in the age group 65 or older had chances of developing the “long COVID”. Respiratory difficulties and musculoskeletal pain were the most common symptoms but in extreme cases organs like kidneys and the heart were also found to be affected. A similar study conducted in Japan by the Health Ministry reported that among the patients who were hospitalized between January 2020 and February 2021 more than 30% of patients had one or more symptoms. The study covered 1,066 COVID-19 patients. Of 24 representative symptoms, the issues of fatigue, shortness of breath, weakened muscles, insomnia, loss of concentration, and hair loss were reported. The symptoms persisted 12 months after the infection. Till now, not much is known about the cause and remedy of the “long COVID”. A symptom-based approach is being followed to treat the patients as of now.

IV. CONCLUSIONS

In recent times, the COVID-19 pandemic was the cruellest health disaster that the world has witnessed. Even after so much study, it’s challenging to predict when this disaster will end. The analysis of the data collected by Max Healthcare (India) brought to light that the third Omicron variant’s wave in India caused less severe symptoms of the SARS-CoV-2 virus. The hospitalization rate during the third wave (Omicron variant) was about 10% of the second wave (Delta variant). This was largely owed to the vaccination drive and the inherent mild nature of the Omicron variant. The low mortality rate during the Omicron wave revealed that the SARS-CoV-2 vaccine worked against the Omicron variant as a large population was already vaccinated by the time the Omicron strain emerged. It protected the patients against developing severe symptoms and considerably

reduced death. Also, the antibodies generated by the previous infections worked as a shield against the Omicron infection. The Omicron wave was also the least severe as it did not affect the lungs much as compared with the Original and the Delta variant. The Delta variant was more damaging to the lungs among all the three variants that created the oxygen supply crises in India during the Delta wave.

As of November 29, 2021, the % contribution of the Omicron lineage was a mere 0.35%, the dominant variant was Delta (96.41%), and the rest (3.24%) were the other variants (Alpha, Beta, Gamma) as reported in India. The % content of Omicron rose to 3.24% on December 13. The highly transmissible Omicron in an amount of 3.78% could not increase the caseload. The % share of other variants fell to an all-time lowest at 1.84% on February 7, 2022, as Omicron was the major variant (97.12%) on this date reducing the share of Delta (1.04%) variant as well to the lowest. The fall in the contribution of both the Delta and the other variants was due to the dominance of the highly transmissible Omicron reported in the first week of February 2022.

STATEMENTS

The data and results in this article are reproducible. No animal or laboratory experiment was conducted. Author Zameer Shervani (ZS), Ph.D. is the Director General of the Food & Energy Security Research & Product Center, Sendai, Japan. The copyrights of all the articles published by the corresponding author (ZS) in open access journals belong to him. Co-authors contributed online. Authors have qualifications: Kehkesan Fatma Ph.D.; Sadia Hasan, Ph.D.; Arif Siddiqui Ph.D.; Venkata Phani Sai Reddy Vuyyuru MBBS; Nudrat Jamal M.Sc.; Adil Ahmed Khan MBBS; Parangimalai Diwakar Madan Kumar BDS, MDS; Atif Ibrahim MBBS; Rabiya Khan Ph.D.

CONFLICT OF INTEREST

Authors declare that they do not have any conflict of interest.

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