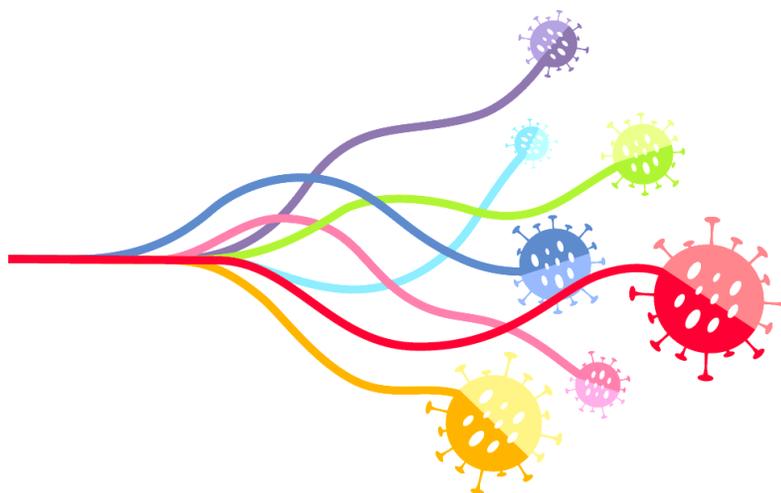# SARS-CoV-2 Variants in Bangladesh

Technical briefing

Report: April 2022

This briefing provides an update on variants identified from 1 to 30 April 2022

IEDCR

icddr,b

ideSHi
institute for developing Science & Health initiatives

Child Health Research Foundation
CHRF Prevent Infections, Save Lives

BILL & MELINDA
GATES foundation

SUMMARY

According to WHO, 5 variants of concern (VOC) and 2 variants under monitoring (VUM) have been reported globally. The Omicron variant is the latest addition which has been designated as VOC in late November 2021 because of its transmissibility, immune system evasion, and vaccine resistance. It has already spread across the world including 1262 cases in Bangladesh as of 23 May 2022 (GIASID.ORG).

This report shares data on SARS-CoV-2 variant surveillance in Bangladesh during 1-30 April 2022.

Principal findings are:
- The Omicron variant accounted for 100% from 1 to 30 April 2022.
- Omicron BA.2 (100%) existed across the country.
- No variant unique to Bangladesh has been detected.

1. Variants in Bangladesh: 1-30 April 2022

Because of the low positivity rate of COVID-19 across the country, less samples in April 2022 were contributed by the donor labs. In addition, most of the positive samples had very high Ct values (Ct >30). Therefore, the consortium was able to sequence only 5 samples from Dhaka collected between 1 to 30 April 2022. These samples were collected from 6 divisions. Table 1 shows the total number of variants sequenced by region.

Table 1. Total number of confirmed cases by variant and region, 1-30 April 2022

Division	Sample received	Omicron BA.1	Omicron BA.2	Total sequenced
Dhaka	11		5	**5**
Chattogram	10			**0**
Rajshahi	9			**0**
Khulna	0			**0**
Barisal	2			**0**
Sylhet	13			**0**
Rangpur	0			**0**
Mymensingh	15			**0**
TOTAL	**60**	**0**	**5**	**5**

All 5 samples were Omicron variants (100%) and all were Omicron BA.2 variants between 1 to 30 April 2022.

4. Cumulative Variants in Bangladesh: July 2021-April 2022

The consortium has sequenced 1568 samples collected between 1 July 2021 to 30 April 2022. These samples were collected from all 8 divisions of Bangladesh. Table 2 shows the total number of variants sequenced by region.

Table 2. Total number of confirmed cases by variant and region, Jul 2021-April 2022

Division	Beta	Delta	Omicron BA.1	Omicron BA.2	Omicron BA.3	Total
Dhaka		383	55	146		**584**
Chattogram		138	9	47		**194**
Rajshahi		209	7	59	1	**276**
Khulna		189	14	61		**264**
Barisal		42	2	28		**72**
Sylhet		51	2	19		**72**
Rangpur		38	7	9		**54**
Mymensingh	1	33	3	15		**52**
TOTAL	**1**	**1083**	**99**	**384**	**1**	**1568**

484 SARS-CoV-2 strains were Omicron variants (identified between Dec 2021 to Apr 2022), 1 Beta (identified in July 2021) and the rest 1083 were Delta (Figure 3).
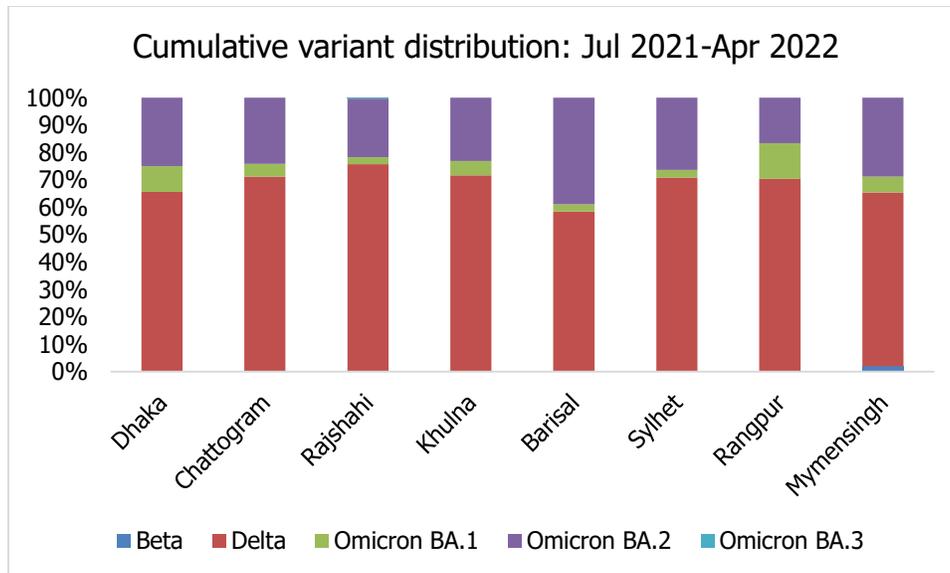

Figure 3. Geographical distribution percentage of SARS-CoV-2 variants in Bangladesh, July 2021-April 2022

5. Metadata Analysis: July 2021-April 2022

We have analyzed 1070 metadata available by specific variables e.g. age, sex, blood group, comorbidity, vaccination, hospitalization, and death, and compared them based on variants (Delta vs Omicron) (Table 3).

Among 1070 patients, 771 (72%) were Delta variant positive and 299 (28%) Omicrons. Out of 299 Omicrons, 42% of patients were between 36-64 years, and 40% were between 18-35 years. Out of 247 Omicron-positive patients, 96% reported positive blood groups: notably 42% O+, 29% B+ and 23% A+. 32% of patients were co-morbid, 86% 1st dose vaccinated, 79% fully vaccinated, 2% hospitalized, and 1.7% death recorded. When compared metadata with sequencing data, no specific Omicron lineage was found to be responsible for hospitalization.

Table 3. Metadata for specific variables (n=1070 available), Jul 2021-Apr 2022

Variables	Delta variants (n=771) (%)	Omicron variants (n=299) (%)	P-value
Age groups (years)			
=>65	69 (9%)	31 (10%)	0.478
36-64	389 (50%)	126 (42%)	0.013
18-35	243 (32%)	119 (40%)	0.010
<18	69 (9%)	23 (8%)	0.506
Male	414 (54%)	169 (56%)	0.435
Blood group	n=617	n=247	
A+	129 (21%)	56 (23%)	0.567
B+	213 (35%)	71 (29%)	0.102
AB+	56 (9%)	13 (5%)	0.061
O+	200 (32%)	103 (42%)	0.009
A-	5 (0.8%)	0	0.155
B-	4 (0.6%)	1 (0.4%)	0.669
O-	7 (1%)	3 (1%)	0.920
AB-	3 (0.4%)	0	0.272
Co-morbidity present	268 (35%)	96 (32%)	0.411
Asthma	40 (5%)	20 (7%)	0.338
Hypertension	132 (17%)	50 (17%)	0.876
Diabetes	138 (18%)	42 (14%)	0.130
Smoker	53 (7%)	11 (4%)	0.047
1st dose vaccinated	495 (64%)	258 (86%)	0.000
Fully vaccinated	404 (52%)	237 (79%)	0.000
Hospitalized	97 (13%)	12 (4%)	0.000
Vaccinated and hospitalized	29 (4%)	7 (2%)	0.247
Deaths	23 (3%)	5 (1.7%)	0.228

Table 4 shows the history of deceased individuals. Five deaths was recorded of any Omicron-positive patients (n=299). Out of 5 Omicron deceased, all were co-morbid, 40% hospitalized and noone vaccinated. However, 23 deaths were recorded of Delta-positive patients (n=771). Out of 23 Delta deceased, 83% were comorbid, 74% hospitalized and 17% vaccinated.

Table 4. Metadata for deceased patients (n=28), Jul 2021-Apr 2022

Variables	Delta variants (n=23) (%)	Omicron variants (n=5) (%)
Deaths	23	5
Comorbidity present and deceased	19 (83%)	5 (100%)
Vaccinated and deceased	4 (17%)	0
Hospitalized and deceased	17 (74%)	2 (40%)

6. NextStrain build of SARS-CoV-2 variant distribution in Bangladesh (1 July 2021-30 April 2022)

A phylogenetic tree of the 1568 complete genomes of Bangladesh variants (collected between 1 July 2021 to 30 April 2022) sequenced by the consortium was constructed using NextClade (clades.nextsrain.org). Phylogenetic analysis reveals that there have been multiple introductions of Omicron variants (clade 21L and 21K), and Delta variants (clade 21A, 21J, and 21I) across the country (Figure 3). From 1 July 2021 to 30 April 2022, no variant unique to Bangladesh has been detected. Only a single Beta (clade 20H) was identified in July 2021. 484 Omicron variants were identified through our surveillance.
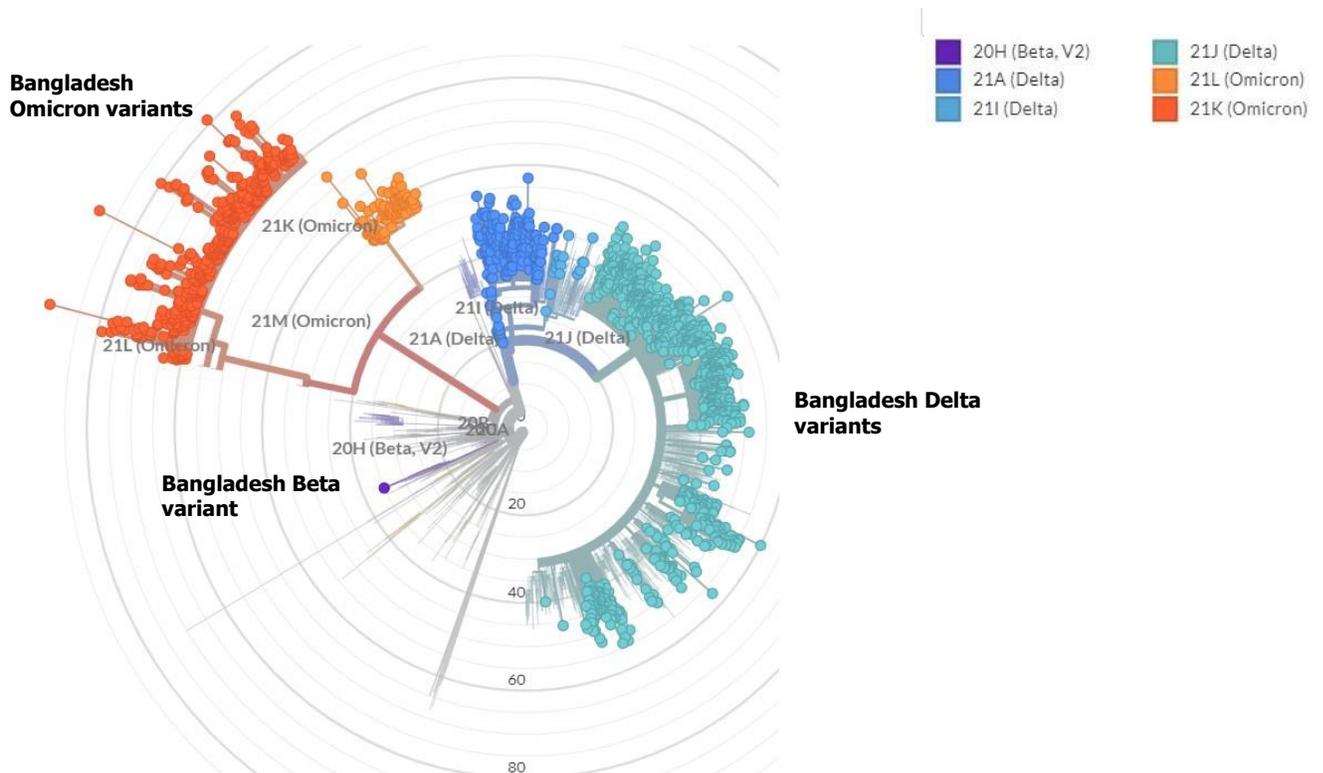

Figure 4. Phylogenetic tree of the 1568 SARS-CoV-2 Bangladeshi variants in closed circle (collected 1 July 2021-30 April 2022) sequenced by the consortium.