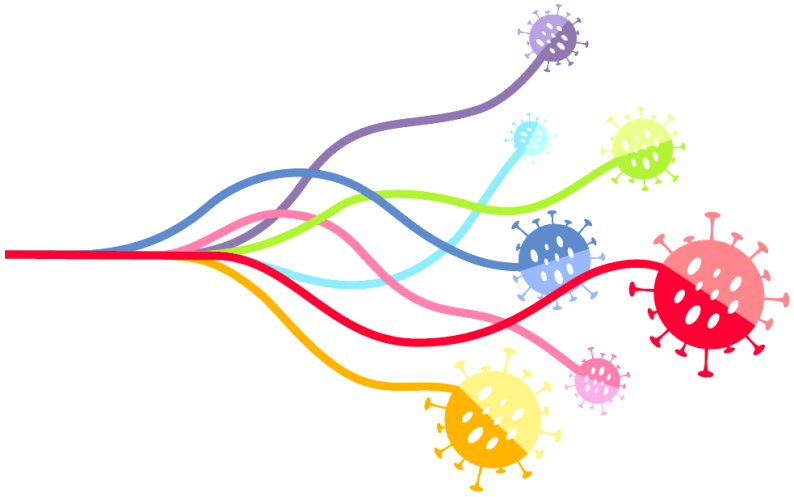
SARS-CoV-2 Variants in Bangladesh

Technical briefing

Report: February 2022

This briefing provides an update on variants identified from 1 to 28 February 2022



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SUMMARY

According to WHO, 5 variants of concern (VOC) and 7 variants under investigation (VUI) 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 to 170 countries including 520 cases in Bangladesh as of 20 March 2022 (GIASID.ORG).

This report shares data on SARS-CoV-2 variant surveillance in Bangladesh during 1-28 February 2022.

Principal findings are:

- The Omicron variant accounted for 100% from 1 to 28 February 2022.
- Omicron BA.2 (93%) and Omicron BA.1 (7%) existed across the country.
- No variant unique to Bangladesh has been detected.

1. Variants in Bangladesh: 1-28 February 2022

The consortium has sequenced 198 samples collected between 1 to 28 February 2022. These samples were collected from all 8 divisions. Table 1 shows the total number of variants sequenced by region.

Table 1. Total number of confirmed cases by variant and region, 1-28 February 2022

Division	Sample received	Omicron BA.1	Omicron BA.1.1	Omicron BA.2	Total sequenced
Dhaka	111	4	4	64	**72**
Chattogram	50			22	**22**
Rajshahi	62	1	1	27	**29**
Khulna	58	1		32	**33**
Barisal	23		1	16	**17**
Sylhet	17			12	**12**
Rangpur	17		2	5	**7**
Mymensingh	20			6	**6**
TOTAL	**358**	**6**	**8**	**184**	**198**

All 198 samples were Omicron variants (100%). Among those, Omicron BA.2 (93%) and Omicron BA.1 (7%) were present. Figure 1 shows the percentage of the geographical distribution of different SARS-CoV-2 variants between 1 to 28 February 2022.

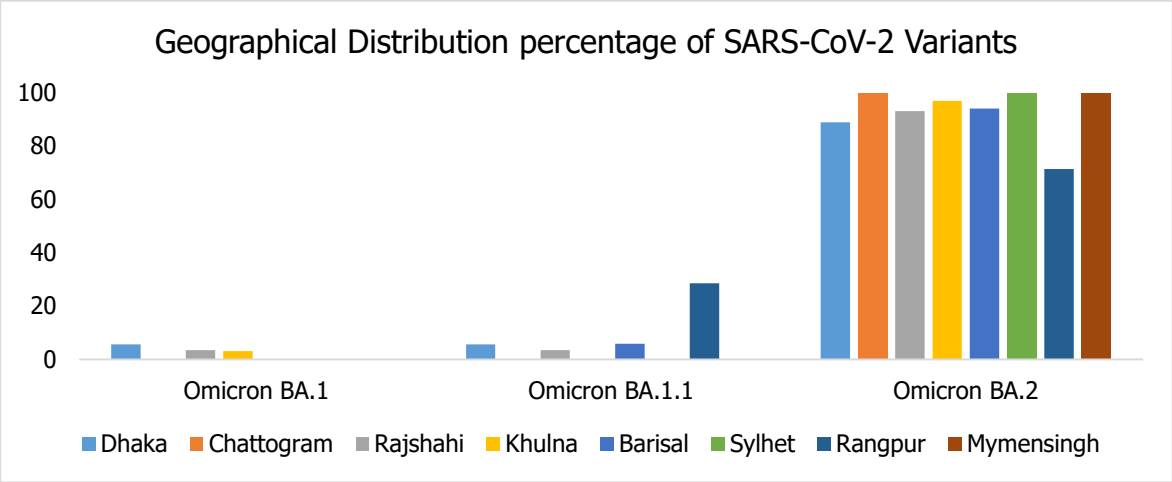

Figure 1. Geographical distribution percentage of SARS-CoV-2 variants in Bangladesh, 1-28 Feb 2022

3. NextStrain build of SARS-CoV-2 variant distribution in Bangladesh (1-28 February 2022)

A phylogenetic tree of the 198 complete genomes of Bangladesh variants (collected between 1-28 February 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 21K and 21L) across the country (Figure 2). From 1-28 February 2022, no variant unique to Bangladesh has been detected.

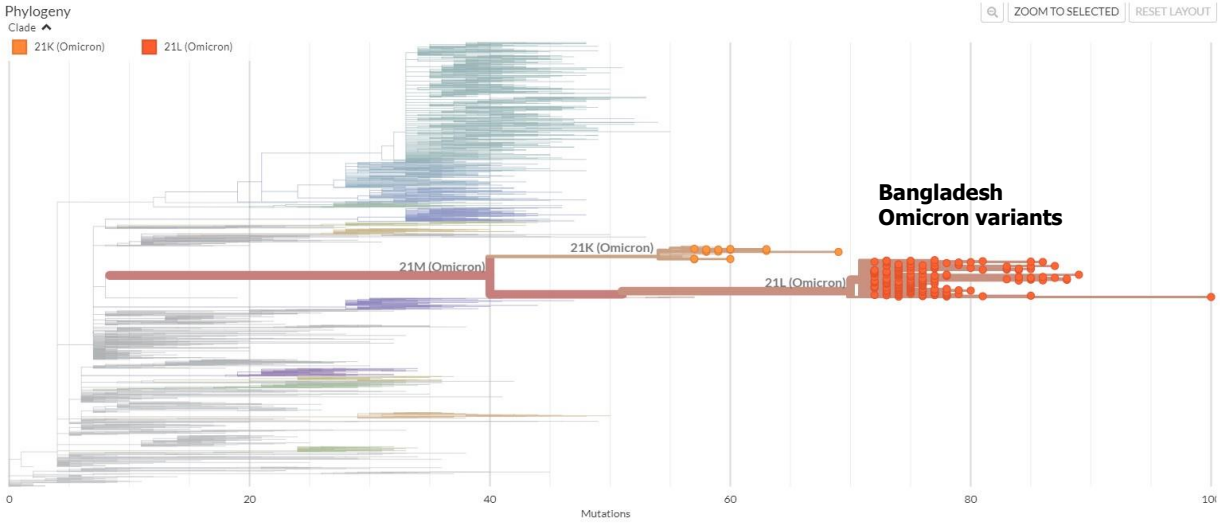

Figure 2. Phylogenetic tree of the 198 SARS-CoV-2 Bangladeshi variants in closed circle (collected 1-28 February 2022) sequenced by the consortium.

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

The consortium has sequenced 1484 samples collected between 1 July 2021 to 28 February 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-Feb 2022

Division	Beta	Delta	Omicron BA.1	Omicron BA.2	Total
Dhaka		383	55	102	**540**
Chattogram		138	9	42	**189**
Rajshahi		209	7	51	**267**
Khulna		189	13	49	**251**
Barisal		42	3	22	**67**
Sylhet		51	1	21	**73**
Rangpur		38	7	8	**53**
Mymensingh	1	33	2	8	**44**
TOTAL	**1**	**1083**	**97**	**303**	**1484**

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

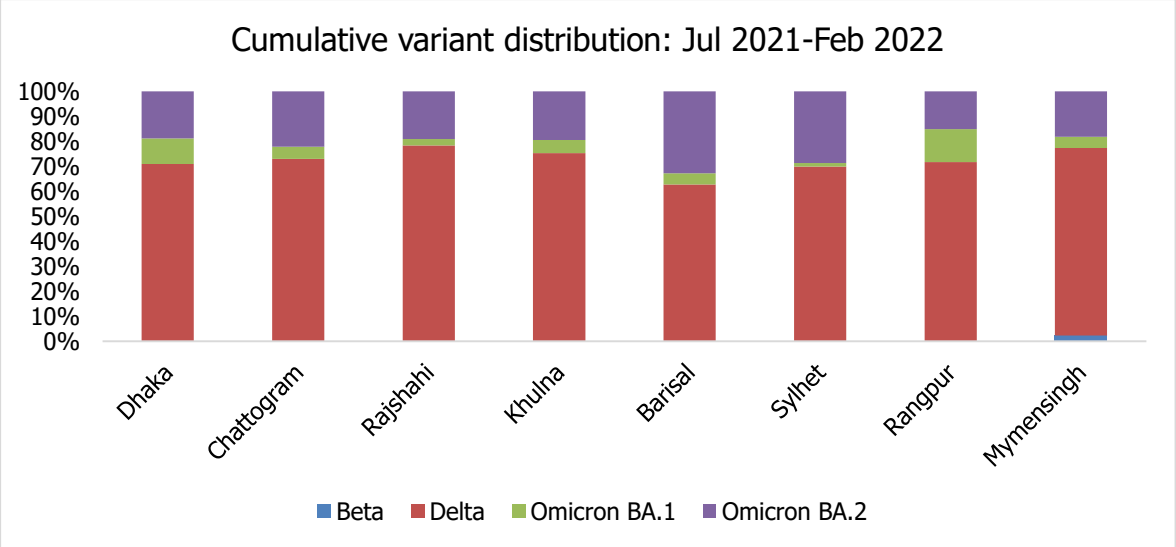

Figure 3. Geographical distribution percentage of SARS-CoV-2 variants in Bangladesh, July 2021-February 2022

5. Metadata Analysis: July 2021-February 2022

We have analyzed 956 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). We did not find a significant difference between variants except hospitalization and deaths.

Among 956 patients, 771 (81%) were Delta variant positive and 185 (19%) Omicrons. Out of 185 Omicrons, 46% of patients were between 36-64 years, and 40% were between 18-35 years. Out of 163 Omicron-positive patients, 96% reported positive blood groups: notably 31% B+ and 40% O+. 29% of patients were co-morbid, 90% 1st dose vaccinated, 84% fully vaccinated, 5% hospitalized, and no 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=956 available), Jul 2021-Feb 2022

Variables	Delta variants (n=771) (%)	Omicron variants (n=185) (%)
Age groups (years)		
=>65	69 (9%)	11 (6%)
36-64	389 (50%)	86 (46%)
18-35	243 (32%)	74 (40%)
<18	69 (9%)	14 (8%)
Male	414 (54%)	103 (56%)
Blood group	n=617	n=163
A+	129 (21%)	35 (21%)
B+	213 (35%)	50 (31%)
AB+	56 (9%)	9 (6%)
O+	200 (32%)	65 (40%)
A-	5 (0.8%)	1 (0.6%)
B-	4 (0.6%)	0
O-	7 (1%)	2 (1%)
AB-	3 (0.4%)	1 (0.6%)
Co-morbidity present	268 (35%)	54 (29%)
Asthma	40 (5%)	9 (5%)
Hypertension	132 (17%)	34 (18%)
Diabetes	138 (18%)	26 (14%)
Smoker	53 (7%)	6 (3%)
1st dose vaccinated	495 (64%)	167 (90%)
Fully vaccinated	404 (52%)	156 (84%)
Hospitalized	97 (13%)	10 (5%)
Vaccinated and hospitalized	29 (4%)	5 (3%)
Deaths	23 (3%)	0

Table 4 shows the history of deceased individuals. No death was recorded of any Omicron-positive patients (n=185). However, 23 deaths were recorded of Delta-positive patients (n=771). Out of 23 deceased, 83% were comorbid, 74% hospitalized and 17% vaccinated.

Table 4. Metadata for deceased patients (n=956 available), Jul 2021-Feb 2022

Variables	Delta variants (n=771) (%)	Omicron variants (n=185) (%)
Deaths	23	0
Comorbidity present and deceased	19 (83%)	0
Vaccinated and deceased	4 (17%)	0
Hospitalized and deceased	17 (74%)	0

6. NextStrain build of SARS-CoV-2 variant distribution in Bangladesh (1 July 2021-28 February 2022)

A phylogenetic tree of the 1484 complete genomes of Bangladesh variants (collected between 1 July 2021 to 28 February 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 to 28 February 2022, no variant unique to Bangladesh has been detected. Only a single Beta (clade 20H) was identified in July 2021. 400 Omicron variants were identified through our surveillance.

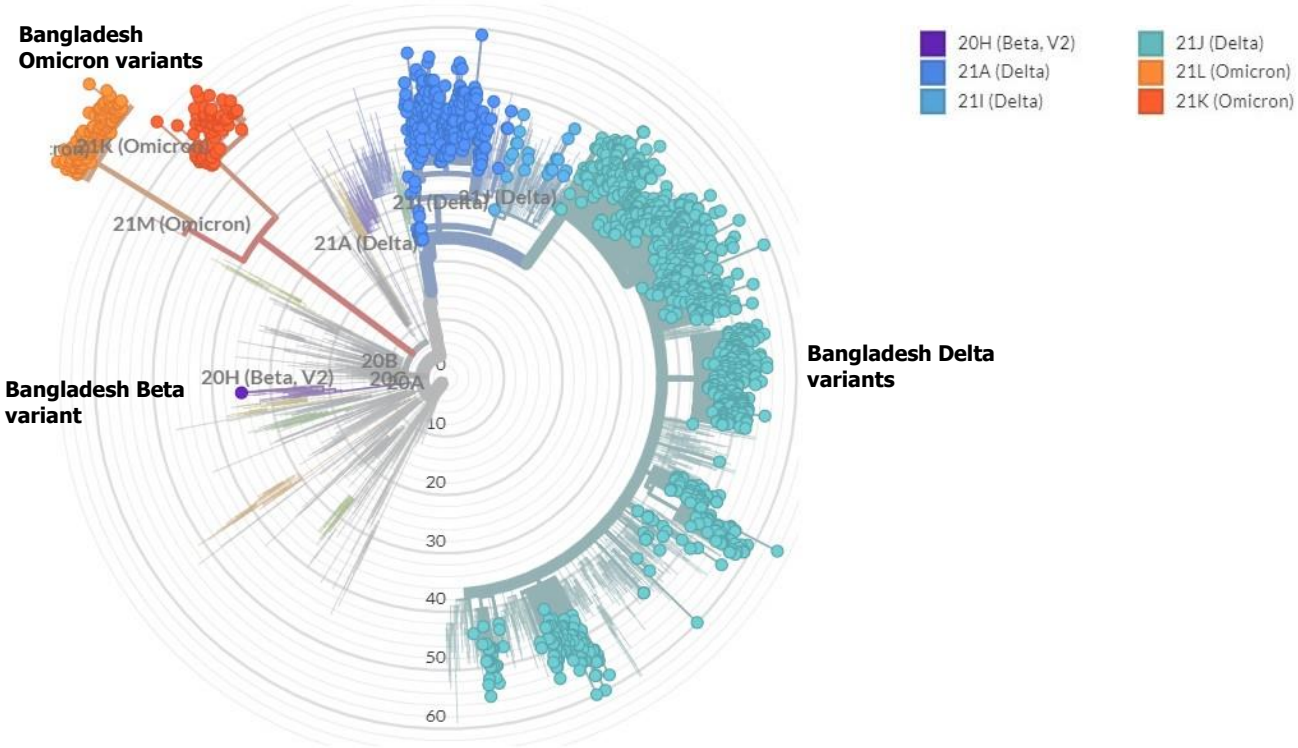

Figure 4. Phylogenetic tree of the 1484 SARS-CoV-2 Bangladeshi variants in closed circle (collected 1 July 2021-28 February 2022) sequenced by the consortium.