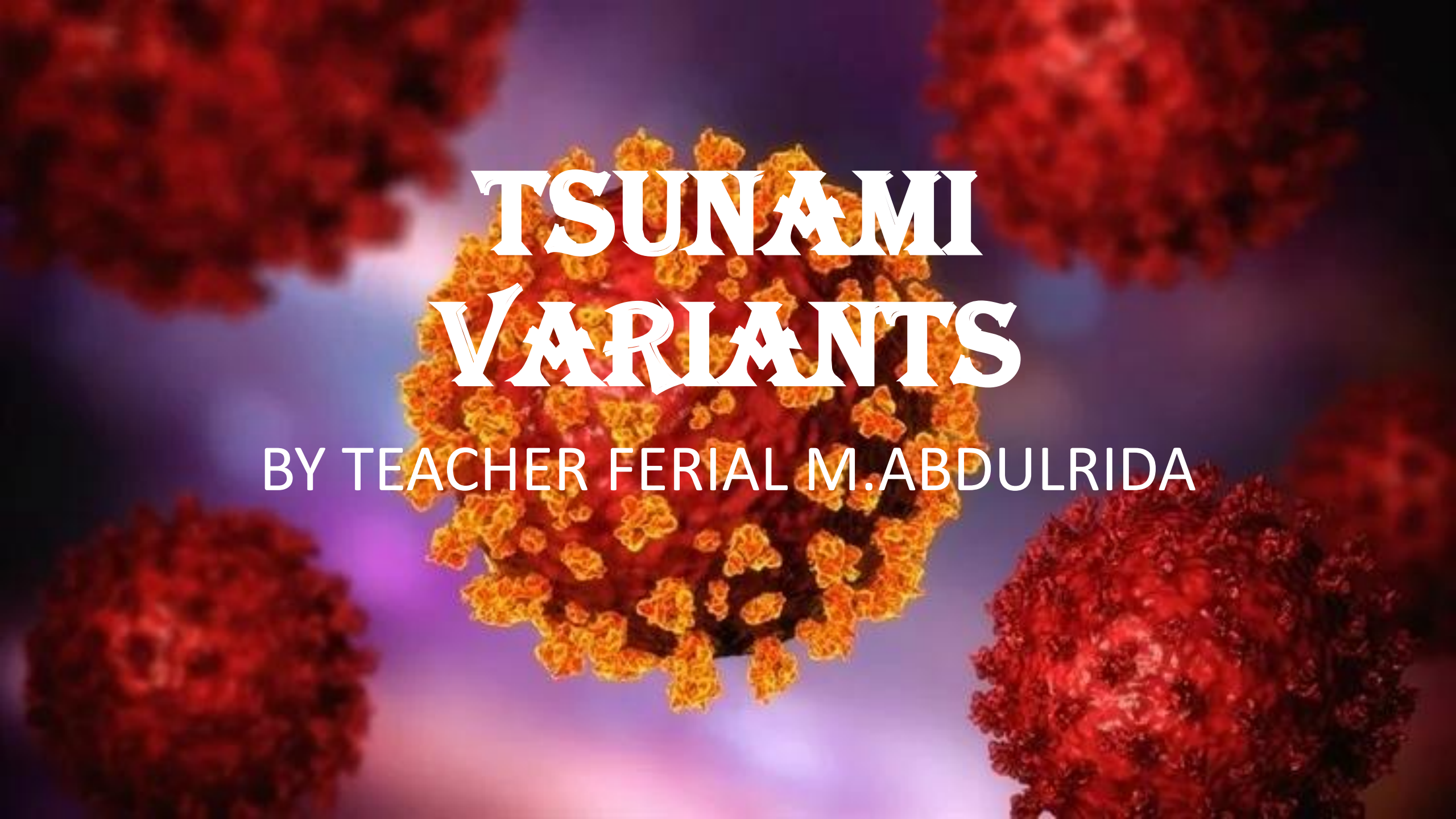
TSUNAMI
VARIANTS
BY TEACHER FERIAL M.ABDULRIDA

Omicron variant

- World Health Organization on November 26, 2021 classified as a variant of concern (VoC).
- January 5, 2022. becoming a dominant strain of COVID-19 .(300 million cumulative cases and 5.5 million deaths).
- exhibits multiple mutations in viral spike (S) protein's receptor-binding domain (RBD) and N-terminal domain region.
- hence associated with more efficient cell entry.
- immune evasion.
- and greater infectivity.
- effective reproduction number of Omicron has been reported to be 3.19 times higher as compared to the Delta variant; therefore, a rapid increase in Omicron cases.

The Omicron variant is observed to replicate more than 70 times in human bronchus, but less efficiently in the lung tissue as compared to the Delta variant
the Omicron RBD binds to human angiotensin-converting enzyme 2 receptors with enhanced affinity. The lower replication ability in human lung suggests less disease severity of Omicron as compared to the Delta variant.

- Omicron and Delta variants, both possessing higher transmissibility, posing threats on the efficacy of vaccines and causing breakthrough infections in vaccinated individuals, may together bring a tsunami of COVID-19 cases and then hospitalizations and death rates might also rise significantly.

Delmicron

- Delmicron is not a new variant like Alpha, Beta, Gamma, Delta, Lambda, Omicron, Mu and others, rather it seems to be having a simple combination of twin spikes and the name is created arbitrarily by merging the existing Delta and Omicron variants.
- Delta plus Omicron variants has raised concerns over the possibility of magnifying the fourth wave of COVID-19 pandemic across the globerapid detection, genomic surveillance, and evolutionary dynamics studies

Omicron/BA.1
Omicron/BA.2
Omicron/BA.2.12.1
Omicron/BA.2.75
Omicron/BA.2.75.2
Omicron/XBB
Omicron/XBB.1
Omicron/XBB.1.5
Omicron/BA.4/5
Omicron/BA.4.6
Omicron/BQ.1
Omicron/BQ.1.1
Omicron/BF.7
Omicron/CH.1.1

- In early 2023, a new Omicron subvariant called XBB.1.5, the **most transmissible strain** of the virus so far, was predominant in the U.S. Cases were also believed to be rising with people spending more time in doors and attending recent holiday gatherings, with fewer wearing masks and taking other mitigation measures. . They are also monitoring more than 300 other descendants of Omicron around the world.

SYMPTOMS

- Symptoms with XBB.1.5 appear to be similar to the earlier Omicron subvariants. Those can range from typical cold symptoms such as cough and congestion to shortness of breath and low oxygen levels that require emergency medical attention

- CDC Symptoms such as the temporary loss of taste and smell can still happen in some instances, but it has become less common with the Omicron variant and subvariants.

- Other symptoms may include
- fever,
- chills,
- fatigue,
- muscle or body aches,
- sore throat,
- nausea or vomiting and diarrhea.
- Symptoms can last between five to seven days but vary from person to person

- symptoms of COVID have become less severe over time, because:
- they tend to remain in the upper respiratory tract and don't affect the lungs as much as “earlier variants.”
- level of _from vaccines or prior infection

OMICRON VACCINE

- Omicron along with updating the current COVID-19 vaccines, developing second-generation vaccines,
- The Food and Drug Administration (**FDA**) has authorized bivalent vaccine booster shots (also called "updated" vaccines) from Pfizer-BioNTech and Moderna for most people ages 6 months and older.
- Bivalent means the shot protects against **two strains** of a virus, and these COVID-19 boosters are designed to protect against both the original SARS-CoV-2 virus and the Omicron BA.4 and BA.5 subvariants.
- A bivalent shot is available to people two months after they've completed the two-dose primary series or received a previous booster dose.

- The recommendation is that people should wait at least two months from their last COVID-19 vaccine dose to get a bivalent booster. Most people eligible for a booster are at least six months from their last dose

- **the bivalent vaccines yielded the highest antibody titers.**

New England Journal of Medicine

Biovalent

- Effective against hospitalization 58.7%
- effectiveness against infection 61.8%

monovalent

- Effective against hospitalization 25%
- effectiveness against infection 24.9%

Another study, from the CDC

- Assessed the bivalent vaccine's real-world effectiveness against Omicron's newest strains, XBB and XBB.1.5, in people who had previously received two to four monovalent vaccine doses.
- Scientists found that—at least for the first three months after vaccination—the updated booster's effectiveness against the XBB subvariants was similar to what it was against BA.5.

WHO Recommendation

- WHO continues to recommend the use of masks by the public in specific situations, regardless of the local epidemiological situation
- WHO advised that patients be discharged 10 days after symptom onset, plus at least 3 additional days since their symptoms had resolved.
- who test positive for COVID-19 but do not have any signs or symptoms, WHO now suggests 5 days of isolation, compared to 10 days previously

- The evidence considered by the guideline development group showed that people without symptoms are much less likely to transmit the virus than those with symptoms.
- evidence also showed that people discharged at day 5 following symptom onset risked infecting 3 times more people than those discharged at day 10.

RX BY WHO

- nirmatrelvir-ritonavir (also known by its brand name ‘Paxlovid’). Nirmatrelvir-ritonavir was first recommended by WHO in April 2022. WHO strongly recommends its use in mild or moderate COVID-19 patients who are at high risk of hospitalization
- sotrovimab and casirivimab-imdevimab, and maintains strong recommendations against their use for treating COVID-19. These monoclonal antibody medicines lack or have diminished activity against the current circulating virus variants.

Post covid

- long COVID has been reported more often in people who have had severe illness, it can impact anyone who has been infected with SARS-CoV-2, even people who had mild illness or no symptoms. Although, new research has shown that for those with mild illness, long COVID symptoms clear after a year.

- Infection with an earlier Omicron variant, still be susceptible to reinfection with XBB.1.5. This is because
- the XBB.1.5 subvariant is more immune-evasive.
- person's immune response naturally decreases over time following infection. The same can be said for vaccination. While it offers some protection, over time that immune response begins to wane.

- As long as there is a COVID-19 outbreak somewhere in the world, there is going to be something new that emerges
- THAK YOU

- XBB.1.5 is one of the most antibody-resistant variants, it doesn't seem to carry any mutation known to be associated with a potential change in severity
- if you have been infected with an earlier Omicron variant, you may still be susceptible to reinfection with XBB.1.5. This is because the XBB.1.5 subvariant is more immune-evasive.

- The immunity induced from the COVID-19 vaccines, booster doses, and previous SARS-CoV-2 infections may be the possible reasons for lower hospitalization and mortality in Omicron cases, and lastly, the newer variant being of mild nature as compared to other variants such as Delta
- Omicron variant owing to its very high transmissibility with the doubling time to be 1.5 to 3 days