Factors determining the 3rd wave of COVID-19 in Bangladesh

Dr Zubair Khaled Huq

As cases of COVID-19 begin to peak in some parts of Bangladesh, health experts say a variety of factors, including the potential to develop immunity, whether the virus's transmission becomes seasonal, adherence to social distancing measures, and more will determine whether we shall face a third the wave of COVID-19 cases and how strong that wave could be. Amidst concerns over a possible third wave of COVID-19 pandemic, an easy approach to prevent it has to be listed. Among factors that could determine waves of the viral disease, one is virus-related and the second is human-related factors. The mutation of the virus is beyond our control.

Through COVID-19 appropriate behaviour, one can stop these waves. Underlining the importance of vaccination will help to prevent the infection. Even if one gets infected, then it will ensure that s/he does not get a severe form of the disease. This must be thought about, as the health officials are rallying to prepare for the COVID-19 third wave, predicted by many researchers and physicians. Apprehension is that the third wave of COVID-19 can strike Bangladesh in the next six to eight weeks. If COVID-19 appropriate behaviour is not followed, the third wave can happen even earlier. We need to work aggressively to prevent another large wave till vaccination kicks in. It would be wise to not to let your guard down. Otherwise, we will hit the third wave in no time.

History reveals that even the Spanish flu pandemic did have a third wave, so history seems to repeat itself. This is being said because of the number of variants and inappropriate behaviour among other things. Meanwhile, the delta variant of COVID-19 is infecting people in the United Kingdom (UK) in an exponential number as authorities were planning to reopen the economy. In Bangladesh, most of the cases are of delta variant. According to reports, the highly transmissible variant first identified in India is now making 99% of fresh COVID-19 cases in the UK. This variant is very quick to transmit.

Cross-border cooperation should be actively pursued and supported at all levels of government, to promote a coherent response recovery approach across a broad territory, border closure and reopening, containment measures, exit strategies, migrant workers – all these must be taken under proper planning. Bangladesh should consider adopting a place-based or territorially sensitive approach for measures to fight the pandemic. Places, where we see more cases like bordering areas, should be under strong surveillance.

Now, the million-dollar question is how to curb the third wave? Experts say the key to curbing additional waves of the new coronavirus will be increasing testing for the virus and continuing to implement and follow social distancing measures when necessary. Widespread testing and contact tracing are needed to determine who has been exposed to the virus, and those individuals must be isolated for 14 days.

Zoning total country into red, yellow, and green could be implemented for lockdown measures. We must do better, and we must avoid the third wave. This means getting stricter with lockdowns, procuring vaccines from whichever reliable source possible, and overall, making tough but unpopular decisions that, in the long run, will save the lives of millions of people. Before the coming Eid-ul-Azha, the chances of mutation increase due to the presence of more variants and gatherings. It is essential to control mass gatherings to avoid a new surge. It is now essential to go for ideal vaccination coverage and raise the coverage in all age ranges, e.g., mass vaccination should be started for persons below 40 years. Forgetting COVID-19 appropriate behaviour and becoming too complacent, we should prepare the hospitals again by ensuring a smooth supply of oxygen to the ICUs to tackle the third wave in Bangladesh.

The writer is a gerontologist and a public health specialist. E-mail: zubairkhaledjoy@gmail.com

SARS-Cov-2 infections may trigger antibody responses against multiple virus proteins

All coronaviruses produce four primary structural proteins and multiple nonstructural proteins. However, the majority of antibody-based SARS-CoV-2 research has focused on the spike and nucleocapsid proteins. A study published in PLOS Biology suggests that immune responses may develop against other proteins produced by the SARS-CoV-2 virus.

The efficacy of spike protein-based vaccines is variable and not everyone infected with SARS-CoV-2 produces detectable antibodies against the spike or nucleocapsid proteins. Therefore, expanded antibody-based options have the potential to play an important role in improving vaccines, diagnostics, and therapeutics, particularly given the emergence of new variants.

In addition to spike and nucleocapsid proteins, the authors located previously unknown, highly reactive B cell epitopes throughout the full array of proteins in SARS-CoV-2 and other coronaviruses, expanding the potential for future vaccine and therapeutic development. Future research is needed, however, to determine how long these antibodies remain and whether responses of vaccinated individuals differ from those who contracted COVID-19 prior to vaccination.

According to the authors, "Our extensive profiling of epitope-level resolution antibody reactivity in COVID-19 convalescent subjects, confirmed by independent assays, provides new epitopes that could serve as important targets in the development of improved diagnostics, vaccines, and therapeutics against SARS-CoV-2, variants of concern, and dangerous human coronaviruses that may emerge in the future".

HEALTH *bulletin*

Differences in countries' COVID-19 guidelines created confusion

New research revealed that variation in national and international guidelines on respiratory protection created confusion among healthcare professionals.

Differences in guidelines on the use of surgical masks and respirators in different countries and organisations during a fast-moving situation such as a pandemic may lead to confusion and anxiety among healthcare professionals, as well as a lack of trust in the ability of the devices to prevent the transmission of SARS-CoV-2.

Researchers analysed the guidelines for infection prevention and control published by leading organisations and agencies in the UK, France, Germany and the US from 1 January to 31 December 2020, noted the variations and looked at the potential reasons for them.

All four countries had different strategies for respirator use. Germany was using them on all COVID-19 cases and suspected cases, while France was using them exclusively on aerosol-generating procedures (AGP). The US was taking a flexible approach, using surgical masks when respirators were not available and the UK had a unit-based strategy, using respirators in high-risk units such as intensive care wards for COVID-19 patients.

The authors conclude, "Inconsistencies in respiratory protection guidelines between neighbouring countries created confusion over optimal measures. Strong collaborations between national and international organisations are critical in such circumstances."

Machine learning identifies new brain network signature of major depression

Star Health Desk

Machine learning is a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns and make decisions with minimal human intervention. The process of learning begins with observations or data, such as examples, direct experience, or instruction, in order to look for patterns in data and make better decisions in the future based on the examples that we provide. The primary aim is to allow the computers learn automatically without human intervention or assistance and adjust actions accordingly.

Using machine learning, researchers have identified novel, distinct patterns of coordinated activity between different parts of the brain in people with major depressive disorder – even when different protocols are used to detect these brain networks. Ayumu Yamashita of Advanced Telecommunications Research Institutes International in Kyoto, Japan, and colleagues presented these findings in the open-access journal PLOS Biology.

While major depression is usually straightforward to diagnose, a better understanding of the brain networks associated with depression could improve treatment strategies. Machine-learning algorithms can be applied to data on brain activity in people with depression to find such associations. However, most studies have focused only on specific subtypes of depression, or they have not accounted for the differences in brain imaging protocols between healthcare institutions.

To address these challenges, Yamashita and colleagues used machine learning to analyse brain network data from 713 people, 149 of whom had major depression. These data had been collected using a technique called resting-state functional MRI (rs-fMRI), which detects brain activity and produces images that reveal coordinated activity, or "functional connections," between different parts of the brain. The imaging had been performed at different institutions using different protocols.

The machine-learning method identified key functional connections in the imaging data that could serve as a brain network signature for major depression. Indeed, when the researchers applied that new signature to rs-fMRI data collected at different institutions from 521 other people, they achieved 70 percent accuracy in identifying which of those new people had major depressive disorder.

The researchers hope that their new brain network signature, which can be applied across different imaging protocols, could serve as a foundation for discovering brain network patterns associated with subtypes of depression, and to reveal relationships between depression and other disorders. A better understanding of brain network connections in major depression could help match patients to effective treatments and inform the development of new treatments.

One in 100 deaths is by suicide

Suicide remains one of the leading causes of death worldwide, according to the World Health Organisation's (WHO) latest estimates. Every year, more people die as a result of suicide than HIV, malaria or breast cancer - or war and homicide. In 2019, more than 700,000 people died by suicide: one in every 100 deaths.

Among young people aged 15-29, suicide was the fourth leading cause of death after road injury, tuberculosis and interpersonal violence. Rates vary, between countries, regions, and between males and females.

More than twice as many males die due to suicide as females (12.6 per 100 000 males compared with 5.4 per 100,000 females). Suicide rates among men are generally higher in high-income countries (16.5 per 100 000). For females, the highest suicide rates are found in lower-middle-income countries (7.1 per 100,000).

Suicide rates in the WHO African (11.2 per 100,000), European (10.5 per 100,000) and South-East Asia (10.2 per 100,000) regions were higher than the global average (9.0 per 100,000) in 2019.

Although some countries have placed suicide prevention high on their agendas, too many countries remain uncommitted. Currently, only 38 countries are known to have a national suicide prevention strategy. A significant acceleration in the reduction of suicides is needed to meet the SDG target of a one-third reduction in the global suicide rate by 2030.

Source: World Health Organisation (WHO)