About 2003 SARS-CoV

SARS-CoV was reported as a novel virus that caused the first major pandemic of the novel coronavirus [Journal of Clinical Virology, 29:13-22; Science, 300:394-1399]. The case-fatality rate was 9.6% [Infect. Dis. 30:309-32]; however, in patients over 65 years of age, this rate exceeds 50% [Journal of Clinical Virology, 29:13-22].

As mentioned in “About 2003 SARS-CoV”, the virus affected 30 different countries in the world causing disease in more than 8000 and killing 774 lives. Originating from Guangdong province of southern China, SARS-CoV was described as the novel coronavirus that is phylogenetically distinct and only distantly related to other human coronaviruses [Journal of Clinical Virology, 29:13-22; Science, 300:394-1399]. The case-fatality rate was 9.6% [Infect. Dis. 30:309-32]; however, in patients over 65 years of age, this rate exceeds 50% [Journal of Clinical Virology, 29:13-22].

Figure 4 Total cases in the top listed affected countries in Europe, America, Asia, Africa including Bangladesh along with the deaths recorded on 21st March 2020.

For the last two weeks China has tightly controlled the spread (Figure 1). South Korea is showing no significant increase in the number of cases indicating robust control of the situation. On an average, situation in Europe is alarming showing high case-fatality rate that in Italy is as high as 11.4%. Spain, Netherlands, France and UK following Italy in high case-fatality (Figure 4). In mainland Africa Egypt has the highest (6.25%) rate and on the other hand in Asia Iran is taking the lead (6.2%) in case-fatality. For still humanity unknown reason, definitely for blessing reason(s) by the “Almighty Creator”, cases are still controlled in the highly densely populated Indian subcontinent. In the entire Africa, as of today, there are 5,185 cases with 163 deaths (Figure 6).

Figure 1: COVID-19 situation around the world from 19 to 31st March 2020. China has controlled the cases, however, the situation of USA, Italy, Spain, Germany, France and some other countries are deteriorating day by day.

Figure 2: By the end of July 2003, SARS had spread to affect a reported 8098 people in over 30 countries including Vietnam, Singapore, Canada, the Philippines, the United Kingdom, the United States, 11 provinces in China, infecting 774 people [N. Engl. J. Med. 348:1953-1966, Infect. Dis. 30:309-327]. Figure also shows the spread of MERS-CoV across the globe.

Figure 3: Under 15 years and over 65 years population in different regions of the world [https://www.worldometers.info/world-population-by-age-and-region/].

Again, from China, SARS-CoV-2 the causative agent of COVID-19, following the similar fashion as SARS-CoV, the virus is attacking the older population (Figure 2). At the origin, it has killed 11% of the diseased with an average age of 55.5 years [Lancet 2020; 395: 507-13]. Today this virus has reached 202 countries and territories in the world attacking the civilization mercilessly. The most affected are Italy, USA, Spain, Germany, France, and Iran are reporting new cases every day. Other European countries like Netherlands, Austria, Belgium, and Turkey are following them (Figure 1). A large portion of the population in the world is older than 65 years (Figure 3). Using this knish, the nasty organism colonized in the Europe travelling from the origin and taking over control of people’s daily-life and taking lives, as well (Figure 1, 4). In the next on the list is the USA (Figure 1, 4) and the virus has successfully created a huge threat in that region affecting record number of populations in a day in its history.
**Breaking the SARS-CoV-2 Chain of Transmission**

Breaking the chain of transmission is the only way to control the spread of infection for an organism like SARS-CoV-2, for which there is no known way of immunization and treatment of the disease. Following are the 0 to 8 measures explained:

0 – Zoonotic transmission at the origin can be stopped by avoiding coming in contact with the sources of virus.

1 – Imported cases can be stopped by not allowing visitors from the affected countries.

2 – Imported cases can be quarantined on arrival at the entry ports to stop spread of disease.

3 – Once the imported cases are in the community major way to stop transmission is social distancing, proper hygienic practices, proper sanitation, along with that home quarantine and isolation at home practices will highly facilitate to stop spreading of the disease to the community.

4 – Stop spread of infectious organisms by hygienic practices, proper sanitation, and use of personal protective equipment when necessary, taking into consideration that the virus can be present in respiratory secretions, faeces, blood, urine, and even tears of infected individuals.

5 – Stop contracting infectious organisms by hygienic practices, proper sanitation practices, and use of personal protective equipment when necessary, taking into consideration that the virus can be present in respiratory secretions, vomit, saliva, faeces, blood, urine, and even tears of infected individuals.

6 – Stop spreading virus cleaning and disinfecting, by 0.5% Sodium Hypochlorite, all the environmental surfaces that may be the reservoir of pathogen taking into account that SARS-CoV can survive for 4 days in diarrheal stool samples, more than 7 days in respiratory secretions at room temperature, for at least 4 days in undiluted urine, faeces and human serum at room temperature, up to 9 days in suspension, 60 hours in soil/water, more than a day on hard surfaces such as glass and metal, up to 48 hours on plastic surfaces, and 6 days in dried state.

7 – Stop spreading virus cleaning and disinfecting, by 0.5% Sodium Hypochlorite, all the surfaces that may come in contact with the virus from the infected individuals.

8 – Stop droplet exposure of the mucous membranes of the eye, nose and/or mouth, inhalation of infectious aerosols, and ingestion taking into consideration of the environmental stability of the virus (in precaution – 6) by social distancing, contact precaution like hand sanitization or hand washing and even respiratory precaution like using masks for all (healthy and for diseased).

**SARS-CoV-2 has reached to 46 countries in Africa among the 54 total countries in this continent (Figure 6).** Undoubtedly all these are imported cases from China. However, so far, the spread is at a limited number, except in South Africa, Egypt, Morocco, Algeria, and Tunisia. Cases of deaths have also been reported in 12 among 46 affected countries (Figure 6). Although there is no scientific basis to link with the limited spread of SARS-CoV-2 in the Indian subcontinent and in Africa, recently scientist at MIT explained warm and humid climate linked to slower the disease transmission, assessing the data on the number of COVID-19 infections in different parts of the world and compared with temperature and humidity from all the regions. This has already been experimentally established in case of MERS-CoV that temperature and humidity affect the stability of the virus [Euro Surveill. 2013;18(38):pii =20590]. The virus was found to survive for 48 hours at the 20°C and 40% RH, 24 hours at 30°C and 30% RH, and for eight hours at 30°C and 80%RH. Thus, it is highly expected that SARS-CoV-2 will also have more or less similar properties as of MERS-CoV and SARS-CoV as the organisms have high level similarities, which leads to the hope that warmer and high humid weather will be beneficial for the civilization of that region, weakening SARS-CoV-2 and naturally limiting the spread of this nasty organism to a large population.

At present, the mortality of SARS-CoV-2 disease in China is 2.3% [N Engl J Med. https://doi.org/10.1056/nejmo_a2001017] and in the world on an average is around 4%, compared with 9.6% of SARS-CoV and 34.4% of MERS-CoV [N Engl J Med. https://doi.org/10.1056/nejmp 20009 29]. Vaccine and medication of these diseases are under trial. The only way to fight against these diseases is to grow awareness to prevent the disease. Through awareness, gathering knowledge, adapting improved hygienic practices, following local, national, and internationally applicable guidance, is indeed possible to break the chain of transmission of SARS-CoV-2 (Figure 5) and eventually to overcome the peril of COVID-19 at home and abroad.