The spread of the new corona virus SARS-CoV-2 caused the latest human pandemic of COVID-19 disease. It is still active, with a total number of infected patients already more than 20 million, and about 750,000 of them died. The social, economic, and political impact of this pandemic have been enormous, probably because of the high speed of its spread, the vast media coverage, the world wide web of social communication, and politics.

However, is it really THE WORST pandemic in human history as it seems by its wide impact and media coverage? Human history is full of tragic stories of dreadful pandemics that wiped out millions of lives, and caused devastating results that wiped out armies and empires worldwide. I will list here some of these catastrophic events so that we may be able to learn from past experience and put events in the context of human story on this planet.

THE ANTONINE PLAGUE (165-180)

This plague affected the Roman Empire, probably brought to the Italian peninsula by the soldiers returning from wars in the Middle East and with the Huns. It was probably caused by a virus, smallpox, or measles. Killed about 5 million people including the emperor Marcus Aurelius and weakened the Roman army.

PLAGUE OF JUSTINIAN (541-750)

It affected the Byzantine Empire all over the Middle East. It was the first recorded pandemic of bubonic plague caused by Yersinia pestis bacteria. It killed about (30–50 million persons), including 40% of the inhabitants of Constantinople, half of the population of Europe, and about 25% of the “world” population. It had a significant impact upon the fall of the Byzantine empire in the Middle East and the spread of Christianity and Islam in that region.

THE BLACK DEATH (1331-1353)

Started in Asia and spread to Africa and Europe, especially the coastal areas transmitted by rats and fleas in ships. It was a plague also caused by Y. pestis bacteria. It started a series of more than 100 recurrent Europeans plagues that lasted until the 18th century. It is estimated that it killed about 75–200 million people in the world including about a third of European population. It recurred in 1370 to England killing about half of its population.

THE NEW WORLD SMALLPOX (1520-1800)

Local inhabitants of the newly discovered areas by the European between the 16th and the 18th centuries were not immune to the old Europeans diseases, especially in the New World of the Americas. It is estimated that diseases such as smallpox, measles, influenza, typhoid fever, and scarlet fever, probably killed more local inhabitants of these new areas than those killed in wars. It is estimated that smallpox by Variola major virus alone killed about 60 million inhabitants. New Europeans diseases probably killed more than 100 million people in the Americas and Australia. Such diseases probably caused the fall of the Aztec and Inca empires, and the demise of many Native American tribes.

CHOLERA PANDEMICS (1-7, 1817-1923)

Vibrio cholerae bacteria caused severe intestinal pandemic episodes that started in Russia where one
million people died, spread with British soldiers to India where it killed more millions, then spread further with the navy to South-East Asia, Japan, and Europe. The third pandemic affected London where the physician John Snow founded modern epidemiology with his studies of that pandemic in 1854. The last of Cholera pandemics affected the United States in 1910–1911. The disease is still a major endemic health problem in many developing countries.

**THE THIRD ASIAN PLAGUE (1885)**

Bubonic plague that started in mining workers in Yunnan, China, and spread to Hong Kong and India. It was also caused by *Y. pestis* bacteria and killed about 12 million people.

**THE RUSSIAN FLU (1889-1890)**

Started in Central Asia, and probably was a type of avian influenza (H2N2) that killed about one million people.

**THE SPANISH FLU (1918-1919)**

This avian influenza (H1N1) is probably the deadliest pandemic of modern human history. Although it is called the “Spanish” flu, it actually started in the USA in March 1918. It rapidly spread into a world pandemic by October 1918 affecting about one-third of the world population in all continents. It was first reported publically in Madrid, so it was called “Spanish Flue.” A more severe second wave resulted in massive total mortality of about 20–100 million people all over the world, especially of the young soldiers after the First World War. Mass troop movements and close quarters in the trenches during the war led to the increased spread of the virus and probably to its faster mutation.

Improved transportation systems made it easier for soldiers, sailors, and civilian travelers to spread the disease. The susceptibility of soldiers to the flu may have been increased by stress, malnourishment, and attacks with chemical weapons. The high mortality was partially attributed to wide spread of malnutrition at the end of the war, as well as the lack of effective treatment and vaccine.

**THE ASIAN FLU (1957-1958)**

This H2N2 influenza pandemic started in Hong Kong, and spread to China and USA and Europe. In the UK, it killed about 14,000 people in 6 months. However, a more severe second wave early in 1958 led to a global death of more than 1 million people. A vaccine was developed, and contained the pandemic.

**HONG KONG FLU (1968-1970)**

This influenza (H3N2) pandemic started in Hong Kong and spread to the world. Although its mortality ratio was about 1%, but it ended up killing about 15% of Hong Kong population, and more than 1 million people worldwide.

**HUMAN IMMUNODEFICIENCY VIRUS/ACQUIRED IMMUNODEFICIENCY SYNDROME (1981)**

Human immunodeficiency virus infection and acquired immunodeficiency syndrome is caused by a retrovirus, a relatively new and unusual viral disease that was first identified in the American homosexual and drug users community in 1981, but it was later discovered that it was actually present in West Africa since the 1920s probably spreading to humans from chimpanzee, then probably it spread to Haiti in the 1960s, and then to New York and San Francisco in the 1970s. The virus was not identified till 1983, and no vaccine is available for this virus till now. However, several effective drugs were discovered to be successful in containing it. It is estimated that the complications of this virus probably killed 25–35 million people in the world since then. The disease is still endemic in many areas in Africa.

**SWINE FLU (2009-2010)**

This H1N1 influenza pandemic started in Mexico early in 2009, and killed about 200,000–500,000 people worldwide.

**SARS (2002-2003)**

Severe Acute Respiratory Syndrome was caused by a corona virus called SARS CoV-1 is believed to have spread to humans from bats to Civet cats to humans in China, and spread from there to about 26 other countries, infecting 8096, and killing 774 people. Its mortality ratio was high (about 10%), but fortunately, its ability to spread was limited. China was criticized at the time for not reporting this disease early enough for other countries to take appropriate precautions. However, it was a good lesson for some countries that learned from that experience, especially South Korea and Japan. Learned protective techniques were also used later in the management of other serious epidemics in Africa (Ebola).

**EBOLA (2013-2016)**

Ebola virus epidemics spread from wild animals and bats in Africa. First reported in Sudan in 1976 after
limited local spread of 284 patients with 50% mortality. A wide epidemic spread in West Africa 2013-2016 killed at least 11,323 patients. A vaccine is available, and the disease is contained but still causes sporadic events.

**MERS (2012-2018)**

Middle East Respiratory Syndrome is caused by a corona virus called MERS-CoV originally from bats but probably spread to humans through close contacts with camels. Started first in Saudi Arabia in 2012 and spread in the Middle East where it affected 2500 cases with 35% mortality. No vaccine is available, but human-to-human spread of this disease is rare.

**COVID-19 (2019)**

This latest new corona virus pandemics most probably started late in 2019 with the spread of SARS-CoV-2 virus from bats in China, and rapidly affected millions of patients worldwide. It affected more than 20 million people so far with confirmed human-to-human spread. Fortunately, the mortality ratio has not been very high with an average of about 5%. The virus was rapidly identified, and its RNA sequence was published within about 2 months after reporting the local epidemic in China. Yet, no effective treatment or vaccination discovered so far.

What did we learn from dealing with pandemics so far?

1. Epidemics and pandemics had significant socio-political impact throughout human history. It caused the fall of empires, and failure of some major military interventions, such as the fall of Athena to the Spartans, the failures of Napoleon in the Middle East and Russia, and the European expansion in the Americas and Australia

2. Acceleration of the spread of pandemics with faster world transportation, tourism, sports, media, and communication

3. Viruses are becoming more important than bacteria in the appearance of new pandemics, especially zoonotic RNA viruses

4. Vaccination has been a very effective approach to control pandemics, such as smallpox, measles, influenza, polio, and others

5. Antibiotics have been effective in controlling bacteria infectious diseases

6. Scientists and physicians are becoming more experienced in discovering the cause of new pandemics, but developing effective treatment and vaccination are still slow and difficult.

7. Mass media, social media, and politics have significant role in the management of pandemics, and may lead to some harmful economic and social results

8. General public education, awareness, and application of personal, local, regional and international preventive measures are important tools in the management of new pandemics, especially when a new infectious disease appears against which a human community does not have natural or previously acquired immunity (No Herd Immunity). Better local, regional, and international communication and cooperation are vital for successful response to any new pandemic in the future.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.