

Possible causes of COVID-19 waves in Iran

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Dear Editor

While some signs of coronavirus (SARS-CoV-2) epidemic were evident around the world in late December 2019 and the WHO, declared the coronavirus epidemic as a public health emergency of international concern (PHEIC) on January 30, 2020.¹ Iran's borders were open to China (identified as the source for the Coronavirus) and other countries. Normal life flowed through these borders until the Ministry of Health of Iran confirmed two definite cases of COVID-19 in the city of Qom near the capital, Tehran, on February 19, 2020. Unofficial and unconfirmed evidence of the disease in Iran had been stated earlier.

Iran, with a population of about 83 million, is located in the Middle East (west of Asia). In the very first days, the officials of the Ministry of Health considered the quarantine of the cities belonged to an era before the First World War and refused to do so. February 21, 2020, Parliamentary elections were held throughout Iran and the official media in Iran, especially broadcasting, which covered the turnout, did not provide information to the audience about the dangers of contracting the Coronavirus. Some observers have accused the Iranian government of "secrecy" and "lack of transparency in information" of coronavirus outbreak in order to hold large-scale parliamentary elections and a rally on the Anniversary of the Islamic Revolution on February 11, 2020 (8 days before the Ministry of Health's official

announcement on COVID-19).

With the arrival of the solar New Year (Nowruz) in Iran on March 20, 2020, public gatherings during vacation shopping and traveling were imminent, and officials from the Ministry of Health urged people to stay home, which was somewhat effective. Travels during this holiday decreased significantly in comparison to previous years.

After the holidays, pavements and automated teller machines (ATMs) were disinfected, which had little effect on transmission and led to the breakdown of a large number of ATMs across the country. The "Mustaan 110" coronavirus detector was unveiled as an achievement in the field of coronavirus control, but it was not available. The use of traditional medicine was also discussed in different parts of the country, but few of these approaches were carried out. At the same time, mutations altering the biological characteristics and pathogenicity of the virus began to occur.²

Religious centers and Friday prayers were closed for the first time in Iran (May, 2020) to fight the coronavirus epidemic, and national lockdown was held, but the roads were open and people used them to travel. With the arrival of Ramadan on April 25, 2020, religious ceremonies were held in less crowded religious centers and mosques.

On August 21, 2020, in the late summer, the government issued instructions for holding the Muharram ceremony. According to the images and videos that were published on social media, health recommendations were not

followed properly in many cases. Then, with the rising of the second and third waves; Coronavirus bans and restrictions were imposed throughout Iran. However, because the government did not provide financial assistance to people and businesses, people had to take buses and subways to go work and earn money and the bans and restrictions were unsuccessful in preventing the spread. Following the decision of the National Headquarters for Combating Corona, unnecessary businesses and companies were closed at 6 pm on November 11th, 2020. Large cities such as Tehran became crowded with heavy traffic, increasing the spread of the coronavirus. Government employees also showed up at work for one-third and one-half (The number of employees), but because the number of clients did not decrease the crowds in the offices increased. Air pollution, which usually intensifies in the colder months of the year due to weather inversions, especially in large cities such as Tehran, caused health officials to fear that the "severity and infectious" of corona could worsen.

A year has passed and the people are tired of the restrictions and the lack of governmental assistance. Beginning with the New Year (Nowruz) on March 20, 2021 markets in Iran became crowded. The crowds differed from previous years because most people wore masks, but there was no fear of the corona epidemic. As before there were no travel restrictions during the New Year holidays, during which people went on 2 week trip. Iran's social customs include many family gatherings and ceremonies, making it difficult to control the disease during the holiday. And tourist trips to neighboring countries, especially Turkey, continued. After the end of the New Year holidays the Ministry of Health declared a state of red alert and announced a nationwide lockdown for another two weeks, which was then extended for another week. In contrast, Ramadan religious ceremonies on April, 2021, were held in religious centers and mosques.

Officials are campaigning to persuade people to stay home during the nationwide lockdown. Along with the pandemic, rising prices in Iran in recent years and the devaluation of the Iranian Rial against the US dollar have brought hard and frustrating days for many Iranian

families. Inflation and high prices have left many households unable to buy meat and fruit, which is good for boosting the immune system.³ Social unrest has also led to rallies in some parts of the country, spreading the coronavirus.

The Presidential elections was held in 18 June 2021 (along with 3 other elections) and campaigning before that led to fifth wave of coronavirus infections, creating another critical situation.

Consecutive waves of coronavirus challenged the capacity of hospitals and plunged Iran's medical staff into month-long battles. The coronavirus also created many casualties among the medical staff. About 600 nurses migrated from Iran during the pandemic.

In December 2020, the US Food and Drug Administration approved two SARS-CoV-2 vaccines as effective against the disease in less than a year after the outbreak. Once approved, vaccination began in developed countries such as the United States, and many other countries began to pre-purchase the vaccine.⁴ Iranian officials banned the import of vaccines from the United States and Britain and without a clear and codified plan for nationwide vaccination. Iranian officials promised to produce an internal vaccine against COVID-19, and led to a delay in the start of vaccination. Meanwhile, some wealthy people went to neighboring countries such as Armenia and Turkey to receive the corona vaccine. After observing frequent waves in Iran, the officials finally started the mass import of vaccines from abroad.

It seems that Iran failed to control the fourth and fifth wave of the corona, and more than six million confirmed cases are reported and also more than 128,000 people have died until November 10, 2021, according to the official announcement of the Ministry of Health.⁵ Now that many developed countries have had success in controlling the epidemic, Iran needs to follow their lead with their help. To properly address these conditions, it seems that policies and plans are changed or modified and people vaccination begins throughout the country. Until November 10, 2021, more than half of Iranian people (more than 42 million people) is fully vaccinated.⁵ Sinopharm, Covaccin, Oxford/ AstraZeneca, Russia's Sputnik V, and some other domestic vaccines are more

prevalent injected in Iran.

Now that all Iranian people have access to the corona vaccine, the new problem is that about 20 percent of people oppose the corona vaccine injection. These people have their reasons, but it is not clear how much scientific and evidence-based. It seems that if the Iranian people do not cooperate with the officials to receive the vaccine, it will not be possible to break the corona chain and the corona situation will continue to prevail in the society. After 2 years, schools and universities are still not reopened and most people suffer from economic conditions.

The most important lesson that can be learned from Corona in Iran is to always give precise data to the people and also to establish more coordination between the officials so that correct and accurate decision can be made as soon as possible.

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Competing interests

The authors declare that they have no competing interests.

Abbreviations

Coronavirus disease 2019: COVID-19;

Severe acute respiratory syndrome coronavirus 2: SARS-CoV-2;

World Health Organization: WHO;

Public health emergency of international concern: PHEIC.

Authors' contributions

MH and JS were responsible for study concept and design. MH wrote the first draft. JS provided comments on initial drafts and coordinated the final draft. All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

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The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

None.

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

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