



An Investigation of the Successful Efforts of Iran in Decreasing Delta Variant of COVID-19 after about Two Years of Conflict with COVID-19 Pandemic

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Dear Editor,

Novel Coronavirus Disease 2019 (COVID-19) was identified and introduced in 2019 as the Spring Festival was being held in China. Afterward, it spread rapidly around the world. On March 11, 2020, the World Health Organization (WHO) announced the outbreak of the COVID-19 pandemic. The first official report of COVID-19 in Iran was announced on February 19, 2020, after two patients were diagnosed with this disease in Qom, Iran (1-6). Less than a year before the outbreak of COVID-19, serious economic and political sanctions were imposed against Iran by the United States (US). The sanctions even penalized non-US companies that traded with Iran, which caused a severe recession in this country. The WHO and other international humanitarian organizations dispatched medical equipment and supplies. However, the sanctions resulted in a serious shortage of medical supplies necessary for the prevention, diagnosis, and treatment of COVID-19. Current reports from Iran and many other countries are worrying given that the exact size of the disease is still unlikely to be announced. However, even the low estimate is worrying (in 80% of cases) because many COVID-19 symptoms are similar to the common cold or flu. Therefore, the diagnosis of these patients and the announcement of accurate reports require sufficient tools (7). Scarcities of pharmaceutical, laboratory, and medical equipment, such as protective clothing, face masks, disinfectants, and gloves have led to an increase in the burden of the pandemic, as well as the mortality rate (8). Despite the fact that the US and UN Security Councils have the authority to temporarily lift sanctions under critical circumstances, no action has been taken to ease

sanctions on Iran (8). It is a tragedy that tough sanctions have restricted access to necessary supplies, killing many Iranians and spreading COVID-19 to many countries. It was claimed that Iran played a major role in the transmission of COVID-19 to many neighboring countries in the Middle East and even distant countries; however, all efforts were made to control the outbreak in Iran in spite of all shortages due to sanctions (9, 10). The Ministry of Health and Medical Education prioritized controlling the spread of COVID-19 immediately following the initial reports of disease in Iran. It then organized the National Committee to Combat COVID-19 and decided to counter this pandemic through the utilization of facilities, knowledge, equipment, as well as the employment of skilled personnel in the country, which resulted in the following actions in Iran:

Recommendation of the health and safety protocols suggested by the WHO, as well as the proper implementation of these recommendations by the national media to educate and inform the public. These recommended protocols include: 1) frequent hand-washing, 2) a three-feet (one meter) social distancing, 3) avoidance of touching the face with contaminated hands, 4) coverage of the mouth and nose when coughing or sneezing, as well as the use of face mask, and 5) attendance at medical centers immediately after the symptoms start

The closure of religious sites without prejudice

The imposition of restrictions on and the closure of tourist destinations, as well as markets

The closure of preschools, schools, and universities

The reduction of office hours and the closure of unnecessary organizations

The cancellation of congregational prayer and

Friday prayer

The cancellation of sports competitions that would bring people together

Constant disinfection of busy and overcrowded places

The identification of people suspected of having COVID-19 in and out of cities

The establishment of teams to diagnose and track illnesses among the healthcare staff of each district

Constant recommendation of canceling patients' funerals

No food shortages, unlike many developed countries, due to companies' 24-hour operations

Efforts to control and reduce traveling on New Year's holidays

The cancellation of Sizdeh Bedar (an Iranian tradition of going to nature on the 13th day of the New Year and spending one day outside) by law enforcement forces

The minimization of family gatherings, which traditionally happen during the first days of the New Year by informing the public of the recommendations given by the Ministry of Health and Medical Education

Immediate construction of field hospitals in various cities by the military to increase medical services to patients and compensate the low bed capacity of hospitals for COVID-19 patients

Financial support of low-income people in the community by the government to encourage them to stay home

Manufacture of COVID-19 detection kits by Iranian companies

The expansion of laboratories and construction of field laboratories to detect COVID-19

The establishment of a telephone system to provide psychological counseling to people who have become bored, anxious, and scared or have any mental problems during the lockdown

The production and broadcast of numerous TV shows interviewing psychologists to offer people useful solutions to control psychological problems during the lockdown

All the measures taken by the Ministry of Health and Medical Education contributed to the control of COVID-19 waves until various vaccines were introduced and marketed for this disease. Despite these efforts, the sanctions slowed the process of vaccination in Iran since they prevented the timely transport of vaccines to this country. At the same time, the mutant strains introduced new variants of the virus, such as the Delta variant as one of the most important ones, which led to the onset of the fifth wave of COVID-19 in Iran. The Delta variant severely affected the Iranian health system due to its faster transmission, more severe pathogenicity, the capability of infecting unvaccinated people, involvement of the host's immune system, severe

hypoxia among patients, and the need to be hospitalized for oxygenation (11). Under these circumstances, only less than 5% of Iranians had been vaccinated, and since the Delta variant infected unvaccinated individuals, a large number of patients were admitted to hospitals leaving no room for new cases. Due to sanctions, as well as the shortages of drugs and vaccines in the new government of President Raisi and the Ministry of Health and Medical Education in Iran, new measures were taken as follows:

For about 20 days, all governmental and non-governmental centers, clubs, religious centers, and any other centers where people could gather were closed.

Interstate and intercity traveling was banned.

Ventilators made in Iran were increased by local experts.

Social media promoted the WHO health and safety protocols and the two-meter social distance.

Since Iranian vaccines were still undergoing clinical stages, imported foreign vaccines were used for vaccination, and the government did not wait for the production of domestically produced vaccines.

The Iranian vaccine COVIran Barekat gradually entered the market, and the shortage of vaccines was partially resolved.

Due to the fatigue of the medical staff, the government employed trained military personnel to vaccinate, which accelerated vaccination, with many vaccination centers operating 24 hours a day.

All of the above reduced the incidence of Delta variant in people, and currently, about 50% of Iranians have received two doses of vaccine and the vaccination of the third dose is underway. However, there are still shortcomings in the field of medicine, vaccines, and diagnostic kits, which are very dangerous for unvaccinated people. There are numerous reports from various neighboring and distant countries that there is a COVID-19 outbreak of Iranian origin; however, Iran has now become able to control the COVID-19 outbreak especially the Delta variant which quickly infected thousands. As a result of these measures, Iran's rank in the sudden increase of Delta variant and other risky variants of COVID-19 fell from the first in the early weeks to a lower position than many developed countries. Today there is a significant decrease in the number of patients; therefore, many hospitals are empty. Iran has shown that even with decades of sanctions and lack of facilities, it can solve many problems with national volition.

Footnotes

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