

Is visiting Qom spread CoVID-19 epidemic in the Middle East?

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Abstract. – The CoVID-19 epidemic started in Wuhan, China and spread to 217 other countries around the world through direct contact with patients, goods transfer, animal transport, and touching unclean surfaces. In the Middle East, the first confirmed case in both Iran and UAE originated from China. A series of infections since those confirmed cases started in the Middle East originated from Qom, Iran, and other Shi'ite holy places. Thereafter, CoVID-19 has been transmitted to other countries in the Middle East. This report aims to trace all of the confirmed cases in the Middle East until March 6, 2020 and their further spread. This report proves that further transmission of CoVID-19 to the Middle East was because of human mobility, besides engaging in different Jewish and Shi'ite religious rites. This report suggests avoiding several religious rites, closing the borders of infected countries, and supporting the infected countries to prevent further transmission.

Key Words:

Epidemiology, Coronavirus, Infection.

Introduction

The Middle East is a term given to describe the transactional region located in southwest Asia and northeast Africa. It includes the Arabian Peninsula (i.e., Saudi Arabia, United Arab Emirates (UAE), Kuwait, Bahrain, Qatar, Oman, and Yemen), the Levant region (i.e., Jordan, Palestine, Lebanon, Syria, Asian part of Turkey, Cyprus, the West Bank, Occupied Palestine “Israel,” and Gaza), and other countries (i.e., Egypt, Iraq, and Iran)^{1,2}. Religious demographics in the Middle East vary from one country to another. Islam is the predominant religion in the Middle East, followed by Christianity, and then several other smaller groups (i.e., Judaism, Bahá'í, Druze, and Nusairism)³.

Muslims can be categorized into several denominations based on their belief. Sunni is the main denomination representing around 85% of all Muslims globally. Their faith is based on following the Prophet Mohammad and Hadith. The Shi'ite is the second denomination representing around 15% of Muslims globally. Shi'ites believe that “Ali ibn Abi Taleb,” Prophet's Mohammad son-in-law, is the rightful heir succeeding him, followed by his descendants “Imams,” to other minor denominations⁴. Each denomination has different cultural rituals. However, the Haj is an annual pilgrimage to Mecca, which is the holiest city for all of the Islamic denominations, and it is performed in the Islamic month “Dhul Hijjah.” Haj is a mandatory religious duty for all of the denominations at least once during their lifetime. Unlike Haj, Umrah involves visiting Mecca and “Kaaba (the Sacred House of God)” any time of the year⁵.

Sunnis believe that Kaaba, Sacred Mosque in Mecca, Prophet's Mosque in Medina, and Al-Aqsa Mosque in Jerusalem are the only holy places in the world⁶. Unlike Sunnis, Shi'ites consider all of the sites associated with Prophet Mohammad and his descendants “Shia Imams in their beliefs” as holy (i.e., Najaf and Karbala in Iraq, Imam Reza Shrine, and Jamkaran Mosque in Qom, Iran)⁷. Mecca is considered as the holy place that gathers the largest number of humans (6.6 million for Umrah and 4 million for Haj in 2019)⁸.

However, Najaf and Qom are considered as the most important scientific “Hawza” headquarters for Shia. Both belong to the same doctrine “Twelfth Ja'fari” and they have the same teaching method and beliefs⁹. There is intensive competition between them to lead the Shi'ites around the world. Both Najaf and Qom are significant destinations of Shi'ites pilgrimages¹⁰. Twenty million Shi'ites visit Qom

every year and are either from Iran or other Shi'a around the world, particularly the Middle East and Gulf countries. During their visit, Shi'ites have different cult rituals (i.e., kissing and touching Shi'ite shrines)^{11,12}. Recently, the World Health Organization (WHO) declared a state of emergency because of the novel coronavirus CoVID-19 pandemic¹³⁻¹⁶. The Coronavirus disease started in Wuhan, China and infected around 848329 cases globally until the end of March, 2020. The number of infected cases in the Middle East is 96990. In addition, there are 44605 cases in Iran, with 2898 death cases, which is considered to be one of the highest number of deaths outside China. This report aimed to trace the causative factors for the spreading of CoVID-19 in the Middle East and to study whether the disease was exported to the Middle East by transportation or by visiting holy sites and shrines.

Materials and Methods

To investigate the causative factor of spreading coronavirus disease in the Middle East, this study collected open source data from several global sources. The data consist of several attributes, namely, Id, country, gender, age, symptoms, confirmation date, confirmation place, visited Wuhan or not, travel history, and the link of source. Another dataset presents the global distribution of the reported confirmed cases, deaths, and recovered data starting from January 22, 2020 until March 30, 2020 was considered. These data were published by Johns Hopkins University¹⁷.

Hierarchical clustering principle was used to trace the history of the infections in the Middle East. The goal is to cluster the infected cases based on the countries and travelling history, and to connect between the infected cases in a specific region and the place from which they came from or visited during the incubation period. The dataset contains information about 13458 cases globally between January 15, 2020 and March 30, 2020. The data on Middle Eastern countries were only considered from January 22, 2020 to March 15, 2020. Middle East data contain information about the first infected cases in various countries (i.e., UAE, Iran, Kuwait, Oman, Lebanon, Bahrain, Qatar, Palestine, Occupied Palestine, Iraq, Saudi Arabia, Jordan, Egypt, Turkey, and Cyprus).

Results

The dataset is clustered based on the infected countries and the confirmation date of confirmed cases, as well as whether these cases were imported from other countries or infected locally. Analyzing the available data showed that the first coronavirus case in the Middle East was transported from Wuhan to UAE on January 25, 2020. Three other cases from the same family were confirmed in UAE and all of them lived in Wuhan before their confirmation of CoVID-19 infection on January 29, 2020. On February 1, 2020, another case in UAE was confirmed and determined to originate from Wuhan. On February 7, both a Chinese and a Filipino case were confirmed in UAE, whereas two other cases (one Chinese and one Filipino) were positively confirmed in UAE on February 8. On February 10, an Indian national who had been in contact with one of the other known cases was confirmed. Another Chinese case was confirmed by February 16.

Iran is the second infected country in the Middle East following UAE. Two Iranian cases that visited Wuhan were confirmed in Qom by February 19. Other three Iranian cases were confirmed on February 20. Two of these cases were confirmed in Qom, whereas the third one was confirmed in Arak. On February 21, four, seven, and two cases were confirmed in Tehran, Qom, and Rasht, respectively. On the same date, Lebanon registered the first CoVID-19 case. In addition, this same case visited Qom on February 20. On February 22, an Iranian couple who traveled to Iran during their incubation period was confirmed in UAE. Ten other cases were confirmed in Iran without any information about their confirmation cities.

In Kuwait, five cases were confirmed on February 24. It was reported that one of these cases visited Tehran, one case visited Qom, and the rest of these cases visited Mashhad in Iran, which is also considered as a holy place for Shi'ites. Similar to Kuwait, Oman, Iraq, and Bahrain registered their first cases on February 24. Two cases were registered in Oman, one in Iraq, and one in Bahrain. The common thing among these cases was that all of them visited Iran. The case that was confirmed in Iraq involved an Iranian who visited Najaf and travelled back to Iran although of coronavirus confirmation. The case involving a Bahraini national visited Iran on the same day when coronavirus infection was confirmed.

On February 25, Kuwait, Oman, Iraq, and

Bahrain registered four, two, four, and nine new cases, respectively. All of these cases visited Iran, and it was reported that eight Bahrainis cases visited Iran via Sharjah, UAE, and one via Dubai, UAE. On February 26, 17, 1, and 10 new cases were confirmed in Kuwait, Lebanon, and Bahrain, respectively. It was reported that all of these cases visited Iran, whereas the Lebanese case specifically visited Qom. Another Lebanese case who visited Iran on February 24 was confirmed on February 27. On the same date, a new case was confirmed in Baghdad, Iraq, two cases were confirmed in Oman, and six cases were confirmed in UAE. The cases confirmed in both Iraq and Oman had visited Iran, whereas the six cases in UAE were infected locally without any information whether these cases were moved from a nearby country (e.g., Iran). Qatar reported its first case on February 29, and this case visited Iran prior and was quarantined once he or she arrived at Doha Airport, with several suspected cases returning back to Iran¹⁸. Qatar confirmed 401 cases by March 15, whereas on that same day, Iraq, Oman, Bahrain, Kuwait, UAE, and Lebanon confirmed 124, 19, 214, 112, 98, and 110 cases, respectively. By the end of March, Qatar, Iraq, Oman, Bahrain, Kuwait, UAE, and Lebanon confirmed 781, 694, 192, 567, 289, 664, and 463 cases respectively.

Saudi Arabia reported 103 cases by March 15, whereas the first case in Qatif was confirmed on March 2¹⁹. The second confirmed case was a companion of the first case and was confirmed on March 4. Both cases visited Iran via Bahrain without disclosing their visit for political reasons. On March 5, three new cases were confirmed in Saudi Arabia. Two of them visited Iran via Kuwait, whereas the other case travelled to Iraq and Iran through Bahrain, accompanying the first and the second cases who were confirmed on March 2 and 4²⁰. In Jordan, one case who had flown home from Italy was confirmed by March 3. By March 15, new five cases involving French tourists who visited Jordan were among the 4,499 cases who were confirmed in France. Similar to Jordan, Turkey confirmed its first coronavirus cases on March 11, which involved a Turkish individual who recently returned from Europe. Turkey announced about six cases by March 15. Cyprus confirmed its first case by March 10, namely, an elderly Germany tourist²¹. Egypt earlier announced its first case involving a German tourist who visited Luxor on February 14. On March 15, Egypt had

110 confirmed cases. By the end of March, Saudi Arabia, Jordan, Turkey, Cyprus, and Egypt confirmed 1563, 274, 13531, 262, and 710 cases respectively.

The first confirmed case of CoVID-19 in Occupied Palestine was reported on February 21, which involved an Israeli who had flown home from the Diamond Princess Cruise that stopped by Wuhan and Japan. The first case was tested and confirmed in Ben Gurion Airport and was privately quarantined. On February 23, a new case was positively confirmed among the Diamond Princess Cruise passengers. Occupied Palestine separately reported two new cases among the quarantined passengers on February 27 and 28. Occupied Palestine instituted an isolation rule to anyone who had visited China, Japan, or South Korea. Furthermore, non-citizens were barred from entry into the country. However, this decision was not helpful in avoiding further spreading of the coronavirus in "Israel" because of the Jewish pilgrimage to Israel²². Six pilgrims were positively tested and confirmed by the beginning of March; therefore, 1,400 Italian and 200 Israeli visitors were quarantined. By March 15, 193 cases were confirmed in "Israel." It was reported that most of these cases may have been infected during the Jewish pilgrimages and other religious rituals. In addition, 35 cases were reported in the West Bank by March 15 and they were infected from Israel, whereas no confirmed cases in isolated Gaza and Yemen have been reported. By March 31, Occupied Palestine, West Bank, and Syria reported 5358, 117, and 10 cases respectively.

The dendrogram in Figure 1 shows the possible route of infected cases in the Middle East until March 5, 2020 based on country, confirmation data, and source of infection.

Discussion

This study investigated whether the CoVID-19 pandemic was imported to Middle Eastern countries via Qom and other holy places in the Middle East or if it was exported outside China via Wuhan. Based on the reported historical data on the mobility of diagnosed cases, the first cases in both UAE and Iran had visited Wuhan before or at the time the CoVID-19 epidemic was initially announced. Several cases were infected via exposure to those cases that originated from Wuhan. However, the Middle

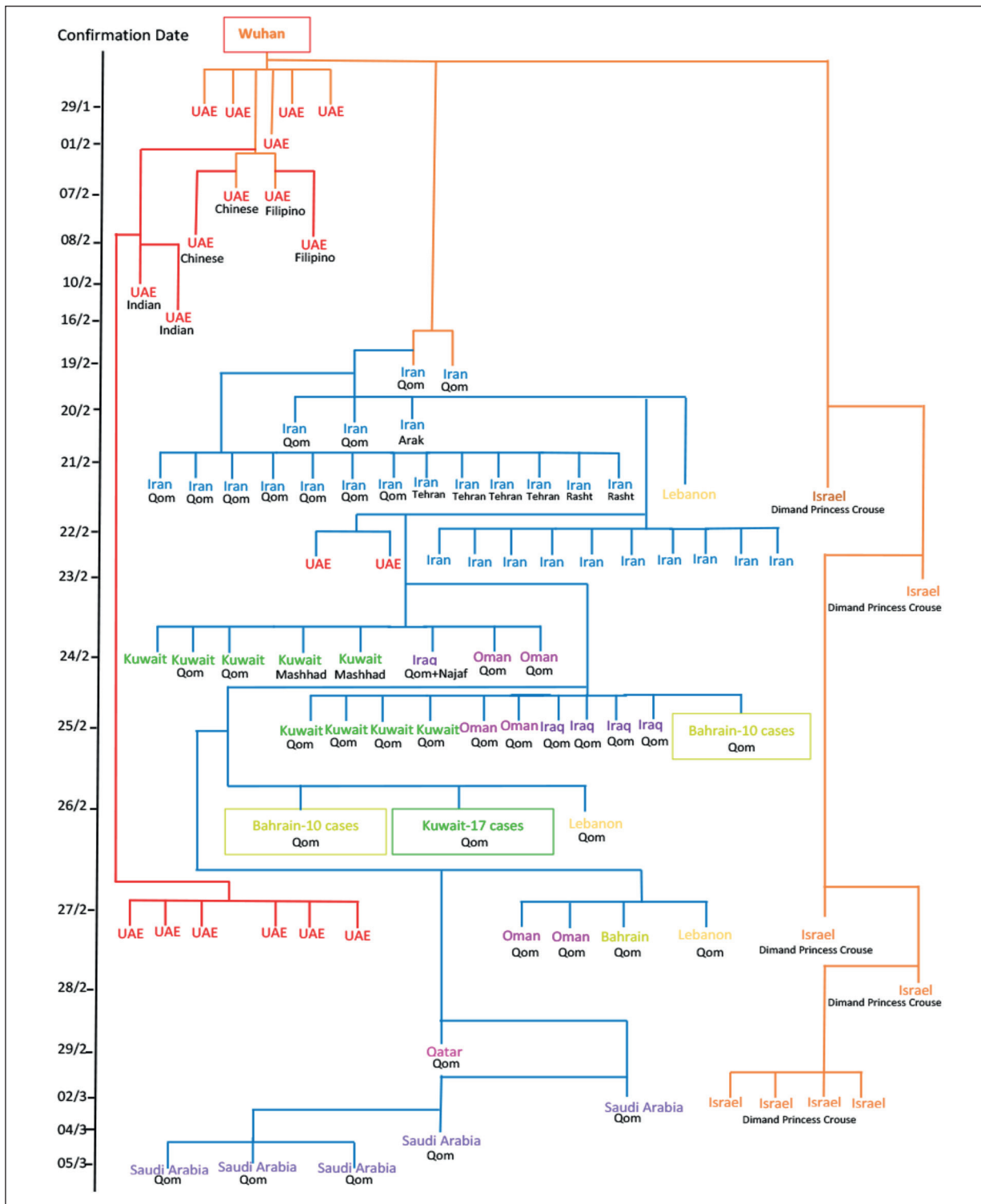


Figure 1. Tracing infected cases based on date, location, and visits to religious places.

East reported 122 cases until the end of February, and 86% of these cases visited Iran during their incubation period or after being suspected of or diagnosed to be infected with CoVID-19.

Furthermore, 77% of these cases visited Qom, Mashhad, or Najaf, whereas 68.5% had visited Qom. Several cases visited Qom for spiritual treatment and recovery from coronavirus infec-

tion. This is because Shi'ites believe that visiting shrines and performing religious rites help in healing coronavirus infections and prevent further transmission²³. Moreover, it was reported that the representative of the Iranian Guide in Qom "Mohammad Saeed," who is considered as one of the most important Shi'ites' spiritual leaders, urged Shi'ites and Iranians to continue visiting the shrines, especially Qom as a treatment place²⁴. Scientifically, visiting such places in emergency cases and epidemics is a very dangerous and controversial issue. This is due to overcrowding and irrational religious rites that are performed by some Shi'ites (i.e., kissing and licking shrines)²⁵. Several cases reported that Shi'ites who were kissing the shrine in Qom believe that these behaviors will kill coronavirus and other diseases as well, despite new government regulations and possible imprisonment²⁵.

However, such behaviors are not accepted among Sunnis who visit Kaaba to pray. Furthermore, although Mecca is the most crowded religious place in the world, the first five CoVID-19 cases in Saudi Arabia visited Iran without disclosing about their trip for political reasons. A dispute between Sunnis and Shi'ites have thus emerged in relation to this issue. For Sunnis, licking or kissing in Kaaba is forbidden, despite being considered as their holiest place.

Jewish pilgrims may have spread CoVID-19 to Israel via religious rituals as well. Jewish pilgrims who visited Italy or came from Italy had infected several individuals in Palestine. Thus, we infer that visiting Qom and other Shi'ite sites, Jewish pilgrimages, and open tourism are the three major factors that have facilitated the spread of CoVID-19 in the Middle East, whereas visiting Qom and other shrines in Iran is the main transmission route for CoVID-19 in the Gulf countries. Approximately 79.5% of the reported cases in the Gulf countries had visited Qom. In addition, it was reported that Saudi Arabia had suspended Umrah from outside the country in late February²⁶. However, nationals of Gulf countries are able to travel across the Gulf borders until the date of writing this report. This study thus suggests closure of borders between Gulf countries, Lebanon, and Iran. This may also prevent further human mobility or exposure to people who travelled to Gulf countries. In addition, it is necessary for WHO and other countries to consider Iran and Iraq as centers of the epidemic to control further spread of the coronavirus disease.

Conclusions

This research traced all of the confirmed cases between January 29, 2020 (the day when the first CoVID-19 case in the Middle East was confirmed) and March 5, 2020 in the Middle East and identified the site with the highest increase in CoVID-19 infections in the Middle East based on collected data from international centers, newspapers, social media, and other sources. Our main findings are as follows:

- All of the CoVID-19 cases were related to human mobility.
- Several cases travelled to other countries, although they were only suspected of engaging in religious rites.
- Tourism is one of the main causes of CoVID-19 spread in various countries.
- Approximately 68.5% of the confirmed CoVID-19 cases in the Middle East had visited Qom, whereas the rest of the confirmed cases visited other Shi'ite holy places, participated in Jewish pilgrimages, travelled as tourists, or flew in from Wuhan.
- Stop US sanctions on Iran to allow them to import medical supplies and equipment. Besides, support both Iraq and Iran that have the highest number of death cases in Middle East because of their poor-quality healthcare systems.

Conflict of Interest

The Authors declare that they have no conflict of interests.

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