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SARS-CoV-2 and RT-PCR Testing in Travelers: Results of a Cross-sectional Study of Travelers at Iraq’s International Borders

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Abstract

Background: In late 2019, a novel coronavirus was detected in Wuhan, China, that caused a pandemic by September 2021, resulting in 224,180,411 cases and more than 4,600,000 deaths worldwide. In response to the pandemic, the Autonomous Kurdistan Regional Government of Iraq (KRG) imposed strict infection control measures at its borders for all travelers from neighboring countries, wherein each traveler was subjected to a mandatory reverse transcription polymerase chain reaction (RT-PCR) test on arrival to detect severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infected travelers. The aim of this study is to determine the rate of infection with SARS-CoV-2 among the travelers entering Kurdistan region through Ibrahim Al-Khalil crossing point with Turkey as a predictor for the upcoming infection waves.

Methods: The data of RT-PCR tests to detect SARS-CoV-2 in all travelers arriving at the Ibrahim Al-Khalil Border Crossing between Iraq and the Republic of Turkey were reviewed from August 21, 2020 to August 21, 2021.

Results: It was found that there were 9873 cases of SARS-CoV-2 infections among 1,082,074 travelers during the study period.

Conclusions: This study shows the importance of mass testing of travelers at border crossings to control the spread of SARS-CoV-2 infection.

The recent outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) led to the development of coronavirus disease 2019 (COVID-19), which was originally reported in the wet market of Wuhan, China, in December 2019. SARS-CoV-2 is included in the group of beta-coronaviruses in the Coronaviridae family, which are closely related to the previously emerged SARS-CoV in 2003, also known as the SARS outbreak.1–4 The SARS-CoV-2 has rapidly spread globally; therefore, by late January 2020, the World Health Organization (WHO) declared a state of emergency and COVID-19 was declared a pandemic on March 11, 2020. According to the WHO’s COVID-19 Weekly Epidemiological Update (Edition 57, published 14 September 2021) more than 224 million people have been infected with the virus worldwide, with more than 4.6 million deaths directly caused by the disease.5 Of these, 80% are mild cases and 40-45% are asymptomatic SARS-CoV-2 carriers.1,6 According to daily data released by the Ministry of Health in Kurdistan Region of Iraq on September 1, 2021, SARS-CoV-2 has resulted in 295,616 positive cases and more than 4000 deaths. In response to the COVID-19 pandemic, the Autonomous Kurdistan Regional Government of Iraq (KRG) decided to open the borders with neighboring countries for all travelers in late July 2020, but only after each traveler was subjected to a mandatory reverse transcription polymerase chain reaction (RT-PCR) screening on arrival at the border crossing. The aim of this study is to determine the rate of infection with SARS-CoV-2 among the travelers entering Kurdistan region through Ibrahim Al-Khalil crossing point with Turkey, from August 2020 to August 2021.7

Methods

Study Design

All travelers arriving at the Ibrahim Al-Khalil border crossing between Iraq and the Republic of Turkey underwent a RT-PCR test according to the manufacturer’s protocol.8,9 The data were
Table 1. Monthly figures of positive COVID-19 cases among travelers versus total passengers

| Month       | Incoming travelers testing positive | Total number of travelers | Positivity rate (%) |
|-------------|------------------------------------|---------------------------|---------------------|
| August 2020 | 718                                | 15,107                    | 4.75%               |
| September 2020 | 1,164                             | 66,821                    | 1.74%               |
| October 2020 | 2,052                              | 112,089                   | 1.83%               |
| November 2020 | 1,526                              | 109,589                   | 1.39%               |
| December 2020 | 664                                | 100,361                   | 0.68%               |
| January 2021 | 92                                 | 82,454                    | 0.11%               |
| February 2021 | 44                                 | 80,389                    | 0.05%               |
| March 2021  | 153                                | 89,875                    | 0.17%               |
| April 2021  | 421                                | 87,537                    | 0.48%               |
| May 2021    | 238                                | 75,180                    | 0.32%               |
| June 2021   | 213                                | 94,370                    | 0.23%               |
| July 2021   | 799                                | 95,377                    | 0.84%               |
| August 2021 | 1,789                              | 72,325                    | 2.47%               |
| Total       | 9,873                              | 1,082,074                 |                     |

Results

The Ministry of Health in the Kurdistan region of Iraq has issued a strict directive for residents or visitors traveling to the Kurdistan Region to bring an RT-PCR negative report, no older than 48 h. Those without the report will be required to undertake a self-paid RT-PCR test at the Kurdistan Region border crossings. All travelers must sign a pledge form, committing to 14 d of self-isolation following their arrival in the Kurdistan region of Iraq.

During the study, we found that 9873 of 1,082,074 tests were positive for SARS-CoV-2 at the Ibrahim Al-Khalil border crossing between Iraq and Turkey. All the cases that tested positive were contacted immediately, and local health authorities were informed to ensure that the infected travelers were isolating and complying with the home quarantine measures until further testing proves the case negative, usually after 10 d of self-isolation.

Discussion

In January 2020, the WHO declared COVID-19 a public health emergency of international concern. An increasing number of confirmed COVID-19 cases were being reported worldwide. The ensuing months saw an almost complete cessation of international travel with quarantine measures required in many countries for all travelers. After the first wave peaked, many countries started to ease the travel restrictions imposed previously, to provide an environment for the economic resilience of these countries; this has resulted in an increase in new cases being reported. To overcome the increased number of imported cases, countries around the globe have started implementing obligatory travel policies to slow down the spread of this virus.

The data presented in this study show that the average percentage of infected cases among travelers entering the country was around 1.25%, which was 4.75% at the peak in August 2020, and lowest (0.05%) in February 2021 (Table 1). When comparing the data of positive cases recorded in the border with those of COVID-19 patients reported by the official data from the Duhok Governorate (which is the nearest governorate in Iraq to the border crossing), we observe that there is a trend that is similar in both data sets (Figure 1). There are 3 peaks, the first being from August 2020 to November 2020, the second was from March 2021 to May 2021, and the third was in July and August 2021. The first peak was caused by the Wuhan or original variant, the second was globally due to the Alpha variant (Kent variant) and the third was caused mainly by the Delta variant.

Thermal scanning for all travelers was 1 of the measures taken in the early days of the pandemic to help detect cases of COVID-19. However, checking for fever alone is insufficient in detecting cases of COVID-19. The negative results of temperature checks for asymptomatic cases would give a false sense of security, resulting in cases being imported into the country and further outbreaks thereon.

In December 2020, the first coronavirus vaccine was administered worldwide, including in the United Kingdom. As of July 2021, approximately 3.42 billion doses of COVID-19 vaccines have been administered worldwide. The relative success of vaccination programs in some countries with high vaccination rates has encouraged the travel industry globally. However, the emergence of new variants with high degrees of immune evasion has cast
doubts on the omission of testing travelers for COVID-19. In this study, the data of positive samples correlates with those in reported daily in the KRI through the MOH daily case reports on COVID-19. Our current study also shows that the infection trends are comparable to the worldwide waves of COVID-19. With the rise of new variants globally, testing travelers to prevent COVID-19 is still a crucial tool to prevent further outbreaks. Until the pandemic is under control, testing is still considered a cornerstone in fighting this pandemic.

In conclusion, this study shows the importance of mass testing of travelers at border crossings to control the spread of SARS-CoV-2 infection.

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