

Presence of SARS-CoV-2 virus in wastewater in the Kingdom of Bahrain during the COVID-19 pandemic

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Abstract

Background: Several countries, including Bahrain, used Wastewater surveillance for disease activity monitoring. This study aimed to determine the presence of SARS-COV-2 in untreated wastewater and to correlate it with the disease spread. **Methods:** A retrospective review was conducted for all wastewater samples tested for SARS-CoV-2 in public health laboratories from October 2020 to October 2022. Samples were collected weekly between February and October 2022 from different areas across Bahrain. Real-time polymerase chain reaction (PCR) was used to test for the presence of SARS-CoV-2 in wastewater, and the results were correlated with the number of COVID-19 cases in the same area. **Results:** Of a total of 387 wastewater samples, 103 (26.6%) samples tested positive for SARS-CoV-2. In late 2020, of 42 samples collected initially, 4 (9.5%) samples tested positive for SARS-CoV-2 in the 4 locations that hosted COVID-19 isolation facilities. Between February and October 2022, 345 specimens of wastewater were tested, and 99 (28.7%) were positive. The highest detection rate was in February, June, and July (60%, 45%, and 43%, respectively), which corresponded to COVID-19 peaks during 2022, and the lowest detection rate was in August and September (11% and 0%, respectively), corresponding to the low number of COVID-19 cases. **Conclusion:** The detection rate of SARS-COV-2 in wastewater samples from Bahrain was high and was significantly correlated with the number of reported COVID-19 cases. Wastewater surveillance can aid the existing surveillance system in monitoring SARS-CoV-2 spread.

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