

# Incidence, risk factors, and whole-genome sequence of SARs-CoV-2 and influenza virus among the Egyptian pilgrims returning Ramadan Umrah mass gathering in Saudi Arabia, April-May 2022

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## Abstract

Background: Ramadan Umrah is the second largest Islamic pilgrimage with 2.75 million pilgrims allowed in 2022. This report presents the results of survey among Egyptian pilgrims returning from Ramadan Umrah for monitoring SARS-CoV-2 and influenza activity and to identify prevalent SARS-CoV-2 variants after this mass gathering. Methods: Cross-sectional survey conducted at Cairo airport April 30-May 5, 2022. Pilgrims were invited to participate voluntarily. After consenting, participants interviewed using questionnaire including demographics, health status and vaccination information and asked to provide NP/OP swabs for SARS-CoV-2 and influenza testing by RT-PCR. Whole-genome sequencing performed for 29 SARS-CoV-2 isolates. Incidence calculated, descriptive data analysis performed, and SARS-CoV-2 patients were compared to negatively tested participants using chi2 and p value<0.05. Results: Overall, 1,003 subjects participated, their mean age 50.9±13 years, 594 (59.2%) were males. Of them, 76(7.6%) tested positive including 67(6.7%) SARS-CoV-2, 7(0.7%) influenza and 2(0.2%) SARS-CoV-2/influenza coinfection. Omicron sublineage BA.2 was the prevalent variant with no difference in severity identified between BA.1 and BA.2. No difference identified between COVID-19 incidence among receivers of different vaccine types or between fully vaccinated and booster dose receivers. Conclusions: survey indicated a low incidence of SARS-CoV-2 and influenza among Egyptian pilgrims returning from Ramadan Umrah. Patients had mild or no symptoms with no hospitalization or deaths reported. Full vaccination and booster doses of COVID-19 vaccines proved equally effective. Enhancing COVID-19 and influenza vaccination before mass gatherings and close monitoring of respiratory viruses among pilgrims returning from Hajj and Umrah are crucial for outbreak early detection and mitigation.

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