Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Estimation of the COVID-19 burden in Egypt through exported case detection

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In December, coronavirus disease 2019 (COVID-19) emerged in Wuhan, China, causing a pandemic that continues to spread globally.[1] 86 countries have reported cases.[2] As of March 6, 2020, Egypt has reported three cases of COVID-19; however, at least 14 cases have been exported from Egypt to four countries.[3] The burden of infection in Egypt, therefore, might be substantially larger than reported. We estimated the potential burden of COVID-19 in Egypt using the approach of Fraser and colleagues.[4]

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We investigated two scenarios: (1) all exported cases, considered to be independent (n=14); and (2) all exported cases minus travellers who had visited multiple countries and possibly linked cases (n=5). In the second scenario, linked cases included six cases exported to France, all of whom appeared to be from the same tour group and so were counted as a single case. Similarly, the two exported cases to the USA, a husband and wife, were counted as a single case, and five cases exported to Canada were counted as three cases because two cases were linked to a third case. One exported case to Taiwan also travelled to the United Arab Emirates, where COVID-19 has been reported, and so was not counted in the second scenario.

We used travel data from the International Air Transport Association, which accounts for over 90% of the world's travel flights and traveller volumes. In February, 2019, 829 370 international air travellers departed from Egypt. The four countries reporting exported cases were ranked eighth (USA), 13th (France), 31st (Canada), and 40th (Taiwan) for travel volumes and together accounted for 5·1% of outbound air travellers from Egypt. We used data from the UN World Tourism Organization on the average length of stay in Egypt by tourists (11·6 days) and proportion of air travellers who are tourists rather than residents of Egypt (61%) and assumed that COVID-19 had been transmitting in Egypt from Feb 6 to March 6, 2020. Residents were assumed to have a 1-month exposure period. Under the conservative estimate of the COVID-19 burden, in which linked and ambiguous cases were eliminated (ie, scenario 2), we estimated an outbreak size of 19 310 cases (95% CI 6270–45 070) in Egypt. Using all cases, regardless of possible non-independence, we obtained a higher estimate of 51 520 cases (28 170–86 440), but given reports that several Nile tour operators have COVID-19 infections, these values might overestimate the burden in Egypt if tourists are preferentially affected and exporting cases. Given this observation, we estimate that the true value is probably closer to the lower end of the CI in the conservative estimate, and probably near 6000 cases.

Egypt probably has a large burden of COVID-19 cases that are unreported, and increased clinical capacity for public health might help identify and manage cases. Using the lower bound of our more conservative estimate, this estimate would still represent a substantially greater number of cases than has been officially reported in the country. Additionally, Egypt might be a source of COVID-19 exportation that is not yet accounted for by many public health initiatives.

KK is the founder and CEO of BlueDot, a social benefit company that tracks emerging infectious diseases. IIB has consulted to BlueDot. All other authors declare no competing interests.

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Estimation of COVID-19 burden in Egypt

To estimate the burden of coronavirus disease 2019 (COVID-19) in Egypt, Ashleigh R Tuite and colleagues[1] used the same model of exported case detection used by Fraser and colleagues for the H1N1 outbreak in Mexico.[2] However, Tuite and colleagues neither clarified nor verified the assumptions of this exported case-detection model. First, the authors used data from the UN World Tourism Organization (UNWTO) on the average length of stay in Egypt by tourists (11·6 days), which is not accurate for the following reasons: we contacted UNWTO to verify the most recent estimates, and the average length of stay by tourists in Egypt was 11·6 days in 2018, 7·78 days in 2017, 6·1 days in 2016, 9 days in 2015, and 10 days in 2014, with no estimates available for February, 2020; the UNWTO estimates combine the length of stays of domestic and international tourists, including visitors from several countries other than the USA, Canada, France, and Taiwan; and for Egypt, a country with rapid changes in the political,