

البحث الأول

Transmissibility and mortality trends of COVID-19 epidemic in Egypt

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Abstract:

Background: Since identification of the first case on Feb. 14, Egypt had implemented several control measures. This research aimed at study the time trend of the transmissibility and mortality of COVID 19 in Egypt.

Methods: Published data on daily reported cases and deaths since the start of the epidemic till week 19 were used. We estimated the basic reproductive number (R0) during the early phase of the epidemic using the simple exponential growth method (SEG) and time dependent method (TD). Then we estimated time varying effective reproductive number (Re) after implementation of the control measures by applying the TD method. Moreover, the trend in the Case Fatality Rate (CFR) throughout the study period was studied.

Results: With SEG method, R0 was found to be 2.26 (2.15–2.38) and 2.58 (2.43–2.72) for infectious period of 8 and 10 days, respectively. While by the TD method, R0 was estimated to be 2.34 (95% CrI: 2.05–2.64) and 3.01 (95% CrI: 2.64–3.40) for mean \pm SD of SI equals 5.8 ± 2.6 and 7.5 ± 3.4 , respectively. With TD method, Re decreased from the initial value of R0 to reach 1.30 (95% crI: 1.17–1.45) in week 7. After that Re values fluctuated closely around 1. CFR reached its peak (7.7%) on April 12 then it decreased to its lowest value (3.4%) after two months before increasing slightly again to (4.1%) in the last days.

Conclusion and recommendation: The initial Basic reproductive number was high in Egypt. Effective reproductive number dropped after control measures till fluctuating around one. CFR also declined over time but slight increase in the last days was observed. After relaxation of the control measures, we recommend the instantaneous monitoring of the transmissibility and mortality in Egypt.

Key Words: Basic reproduction number (R0); exponential growth; Effective Reproductive number; Mortality; COVID-19