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COVID-19 Transmission Among Close Contacts

New research from Guangzhou, China has found that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the pathogen that causes COVID-19, can be transmitted faster within households as compared to SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV).

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Researchers used a comprehensive contact tracing dataset from the Guangzhou Center for Disease Control and Prevention to estimate the secondary attack rate of COVID-19 – ie, the probability that an infected person will transmit the disease to their household or non-household close contacts.

Their statistical model shows that older people (60 years old and above) are the most susceptible to SARS-CoV-2 transmission within households. Notably, transmission was also efficient during the incubation period of COVID-19 cases.

Based on these findings, comprehensive tracing and timely quarantine of close contacts of infected individuals are imperative to prevent further spread of the virus during incubation periods. Providing the appropriate facilities for 'exposed' contacts to quarantine and for mild cases to be kept away from their families are important measures to curb transmission within households, according to the researchers.

This retrospective study on the 'spatiotemporal' epidemiology and transmissibility of SARS-CoV-2 in Guangzhou, the most populated city in southern China, was conducted between 7 January 2020 and 18 February 2020. The research team traced 195 unrelated close contact groups (215 primary cases, 134 secondary or tertiary cases, and 1,964 uninfected close contacts).

The effects of age and sex on the infectiousness of COVID-19 patients and susceptibility of their close contacts were included in the study.

Key findings of the study include:

- Estimated secondary attack rate at 12.4% among household contacts (defined on the basis of close relatives) and 17.1% when household contacts were defined on the basis of residential address.
- Compared with the oldest group (≥60 years), the risk of household infection was lower in the youngest age group (<20 years) and among adults aged 20-59 years.
- Higher infectiousness of COVID-19 cases during the incubation period than during the symptomatic period, although differences were not statistically significant (OR 0.61 [95% CI 0·27–1·38]).

Meanwhile, the lower estimated transmission rate of SARS-CoV-2 during the illness period than during the incubation period could be partially attributed to self-distancing within households when the primary cases developed symptoms, according to the research team.

The infectiousness measured by the transmission model in this study accounts for both the biological process of viral shedding and the social contact process. And, as noted by the researchers, their data cannot separate the two processes.

Source: The Lancet

Image credit: Lyubov Ivanova via iStock

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