

# Transmissibility of Severe Acute Respiratory Syndrome Coronavirus 2 Among Household Contacts of Coronavirus Disease 2019-positive Patients: A Community-Based Study in India

Aswathy Sreedevi<sup>1</sup>, Ahmad Mohammed<sup>2</sup>, Mini Satheesh<sup>3</sup>, Anuja UshaKumari<sup>4</sup>, Anil Kumar<sup>1</sup>, Geetha Raveendran<sup>4</sup>, Saritha Narayanankutty<sup>3</sup>, Soumya gopakumar<sup>3</sup>, Anisur Rahman<sup>2</sup>, Sachin David<sup>5</sup>, Minu Mathew<sup>1</sup>, and Prem Nair<sup>1</sup>

<sup>1</sup>Amrita Institute of Medical Sciences and Research Centre

<sup>2</sup>World Health Organisation Country Office for India

<sup>3</sup>Government Medical College Thiruvananthapuram

<sup>4</sup>Government Medical College Kollam

<sup>5</sup>Amrita Institute of Medical Sciences

April 21, 2023

## Abstract

**Background:** The transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is complex and multifactorial. We aimed to identify the risk factors for infection among the household contacts of index patients and to determine the incubation period, serial interval, and estimates of secondary infection rate. **Methods:** We conducted a study in three districts of Kerala among the inhabitants of households of reverse transcriptase polymerase chain reaction (RT-PCR)-positive coronavirus disease (COVID-19) patients between January and July 2021. COVID-19-positive patients and corresponding contacts were enrolled and followed up for 28 days to determine RT-PCR positivity and the presence of total antibodies against SARS-CoV-2 on days 1, 7, 14, and 28 from the date of enrolment. **Results:** The mean incubation period, serial interval, and generation time were 1.6, 3, and 3.9 days, respectively. The secondary infection rate was 43.0%. Individuals who worked outside the home were protected, whereas those who had kissed the COVID-19-positive patients during illness were more than twice at risk of infection than those who had not kissed the COVID-19-positive patients. Similarly, the contacts who had shared a toilet with the COVID-19-positive patients were more at risk than those who had not shared a toilet. However, the contacts who reported using masks were at a higher risk of infection in household settings. **Conclusions** Assessment of SARS-CoV-2 transmission in household settings is important, considering its high secondary infection rate. Close physical contact and toilet sharing increase the risk of infection. This study demonstrates shorter incubation period and serial interval.

## Hosted file

\_Dr\_Aswathy\_2\_Final\_\_Main\_document\_..docx.docx available at <https://authorea.com/users/610064/articles/639137-transmissibility-of-severe-acute-respiratory-syndrome-coronavirus-2-among-household-contacts-of-coronavirus-disease-2019-positive-patients-a-community-based-study-in-india>

## Hosted file

\_Dr\_Aswathy-Figure1.docx available at <https://authorea.com/users/610064/articles/639137-transmissibility-of-severe-acute-respiratory-syndrome-coronavirus-2-among-household-contacts-of-coronavirus-disease-2019-positive-patients-a-community-based-study-in-india>

### Hosted file

\_Dr\_Aswathy-CoV-2\_Figure2.docx available at <https://authorea.com/users/610064/articles/639137-transmissibility-of-severe-acute-respiratory-syndrome-coronavirus-2-among-household-contacts-of-coronavirus-disease-2019-positive-patients-a-community-based-study-in-india>

### Hosted file

\_Dr\_Aswathy\_-CoV-2\_Figure3.docx available at <https://authorea.com/users/610064/articles/639137-transmissibility-of-severe-acute-respiratory-syndrome-coronavirus-2-among-household-contacts-of-coronavirus-disease-2019-positive-patients-a-community-based-study-in-india>