

Letters

RESEARCH LETTER

SARS-CoV-2 Infection Among Community Health Workers in India Before and After Use of Face Shields

The transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is believed to be predominantly through respiratory droplets from infected persons in close proximity to uninfected persons,¹ although airborne transmission may also play a role.^{2,3} Face shields have been proposed to prevent transmission in the community,⁴ but data are lacking. We describe transmission in a community setting before and after the use of face shields.

Methods | Beginning May 3, 2020, community health workers from a research network in Chennai, India, were assigned to counsel asymptomatic family contacts of patients who had tested positive for SARS-CoV-2 at their residence. The workers were housed in separate rooms of hostels and provided food; they did not visit their homes or public places outside work. Prework training was done with no more than 3 persons attending any session. Workers communicated with each other by phone. All workers' nasopharyngeal swabs taken on May 1, 2020, tested negative for SARS-CoV-2 by reverse transcriptase-polymerase chain reaction (RT-PCR).

Each worker traveled in a small van with a steel partition to prevent air exchange between the driver and back cabin where the worker sat. Workers maintained constant masking and social distancing when interacting with the driver. Personal protective equipment included alcohol hand rub, 3-layered surgical masks, gloves, and shoe covers. Family members assembled in the front room of each house, and the worker, standing 6 feet away, explained the principles of quarantine, mask use, social distancing, hand washing, and symptoms of SARS-CoV-2 illness. Family members were asked to wear face masks during the conversation, although workers reported that some did not.

On May 16, 2 workers developed symptoms. The remaining 60 workers were monitored, and all workers were tested for SARS-CoV-2 by RT-PCR between May 16 and May 19, and home visits suspended. Contact tracing was conducted. On May 20, face shields made of polyethylene terephthalate (250- μ m thickness) were added to the equipment provided. After each visit, the shield was decontaminated using alcohol-based solution, and at the end of the day, soaked in detergent mixed with water. After the introduction of face shields, workers were screened for symptoms and had RT-PCR tests performed weekly.

Family members in the visited homes were followed up for symptoms by daily phone contact with the worker. For symptomatic members, the need for testing was conveyed to local public health officials who subsequently shared the test results with workers. We obtained the number of positive test results in visited households to assess worker exposure.

We compared the number of positive test results before (May 3-15) and after (May 20-June 30) the introduction of face shields. The ethics committee of the community research network exempted the study from review and waived the need for informed consent.

Results | Before face shields, 62 workers (40 women) visited 5880 homes with 31 164 persons. From the 5880 homes visited, 222 persons tested positive for SARS-CoV-2, between May 4 to May 13. Twelve workers (19%) were infected during this period. Eight developed symptoms (fever, cough, sore throat, myalgia, and anosmia) and 4 were asymptomatic. The 12 infected workers were moved to care centers. Four developed desaturation and mild breathing difficulty and were treated with oral hydroxychloroquine and oxygen therapy; all 4 recovered. Contact tracing of the workers who tested positive identified 14 van drivers, who were monitored. All were asymptomatic and tested negative between day 7 and 10 after contact with the workers.

After face shields, 50 workers (previously uninfected) continued to provide counseling, visiting 18 228 homes. Among the counseled, 118 428 persons, 2682 subsequently tested positive for SARS-CoV-2. No worker developed asymptomatic or symptomatic infection.

Discussion | This study found no SARS-CoV-2 infections among community health workers after the addition of face shields to their personal protective equipment. Because the first worker became symptomatic 13 days after beginning home visits and workers had no contact with family, coworkers, or the public, there is no known alternative source of infection for the workers except the asymptomatic contacts of SARS-CoV-2 patients. The face shields may have reduced ocular exposure or contamination of masks or hands or may have diverted movement of air around the face.

Limitations include the before-after design; however, the unique living circumstances of the workers minimized other sources of transmission. Further investigation of face shields in community settings is warranted.

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