Hindustan Times

100-fold rise in viral load expelled by Covid patients during the second wave: Study

There was a 100-fold increase in the viral load of the respiratory particles expelled by Covid-19 patients during the second wave dominated by the Delta variant. These findings are a part of an ongoing study by the Foundation of Medical Research (FMR) and the Brihanmumbai Municipal Corporation (BMC). The study has been selected for poster presentation at the ongoing 52nd Union World Conference on Lung Health being held virtually.

The preliminary findings of the study shared in the poster also highlight a two-fold rise in the proportion of people expelling the virus from their breath during the second wave. Though the study is being conducted on Mumbai respondents, study authors said that it explains the higher transmission and increased number of Covid-19 cases in the second wave. (HT PHOTO)

Published on Oct 20, 2021 10:13 PM IST | By Jyoti Shelar, Mumbai

There was a 100-fold increase in the viral load of the respiratory particles expelled by Covid-19 patients during the second wave dominated by the Delta variant. These findings are a part of an ongoing study by the Foundation of Medical Research (FMR) and the Brihanmumbai Municipal Corporation (BMC). The study has been selected for poster presentation at the ongoing 52nd Union World Conference on Lung Health being held virtually.

The preliminary findings of the study shared in the poster also highlight a two-fold rise in the proportion of people expelling the virus from their breath during the second wave. Though the study is being conducted on Mumbai respondents, study authors said that it explains the higher transmission and increased number of Covid-19 cases in the second wave.

An e-poster presentation is a format of presenting at scientific conferences where researchers present the findings of their research using a poster containing the gist of the study.

The study includes a cohort of 75 Covid-19 patients from Mumbai who were asymptomatic or mildly symptomatic and were under home isolation between July to September 2021. These patients were recruited for the research within 48 hours of testing positive for the infection. More patients are also being recruited as the study is ongoing.

In order to understand the viral load expelled through the respiratory particles, the participants were given N95 masks layered with a special gelatin membrane. Their respiratory particles were captured in a 30-minute process that involved talking, reading, coughing and tidal breathing. The field assistants then collected the gelatin membrane from the masks and sent them for Real-Time Reverse Transcription–Polymerase Chain (RT-PCR) testing in a stabilising medium.

“More than 90% of the patients were mask-positive, meaning they were expelling ample of virus in their respiratory particles,” said Kalpana Sriraman, senior research officer at FMR and co-author of the study. “This was very high compared to our previous study when only around 42% of patients were found mask positive,” she said.

Mask positive refers to samples taken from masks that tested positive in RT-PCR tests. In this case, the gelatin membranes were processed.

The previous study, which analysed patients infected in the first wave, was published this April in PLOS One journal.

The ongoing study highlights two other important factors: first, the Cycle Threshold (CT) value of patients during the second wave was much lower on masks as well as the swab samples. A lower CT value indicates a higher viral load as the RNA of the virus could be picked up quickly in the RTPCR. Second, those patients who were partially or fully vaccinated showed a marginal reduction in the viral load expelled by them. Patients who were fully vaccinated and had breakthrough infections still expelled the virus.

“These findings will be important as we design future vaccines to break the chain of transmission,” said Dr Nerges Mistry, director of FMR and a co-author of the study.

An important takeaway message from the study is the way masks are disposed of. “It is clear that the masks carry a high amount of viral load even if the patients are asymptomatic. Thus, careful disposal of masks should be encouraged,” said chest physician and study co-author Dr Vikas Oswal.

He said that one must avoid touching the inner side of the mask. “Hold the mask carefully from the outer side or by the strings, roll it in a plastic bag or a newspaper and discard it. One must not let the mask touch any surface from the inner side. If someone has symptoms like cough and cold, it is ideal to discard their masks separately in a sealed plastic bag.

The ongoing study has used CT values to arrive at the quantitative aspects of viral load. It is yet to undergo the peer-review process. “The Delta variant which was dominant during the second wave was undoubtedly more infectious as we saw many cases of entire families testing positive,” said Dr Kedar Toraskar, critical care specialist at Wockhardt Hospital and member of the Covid-19 task force of Maharashtra. “However, there are many other techniques to look at the quantitative aspect of the viral load other than the CT values,” he said.

Maharashtra has recorded over 6.5 million cases and over 139,800 deaths. In July, this year, most districts had a test positivity rate of around 5%. The test positivity rate is now under 2%.