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COVID-19: IIT-B study confirms social distancing norms, effectiveness of face mask

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Bhubaneswar, Dec 1 (PTI) Highlighting the importance of social distancing to contain the spread of COVID-19, a new study at IIT Bhubaneswar has found that small droplets released during a sneeze can travel up to 25 feet without protective measures like a face mask and tiny particles can also escape through such gears.

The study said protective measures like face mask and face shield effectively reduce the leakage and reach of the sneeze within 1ft3ft. However, they do not completely stop the leakage of smaller droplets, it said.

Hence social distancing is equally important. The study recommends using the elbow or hand to prevent droplets leakage even after wearing a mask during coughing and sneezing, IIT Bhubaneswar said in a statement.

Noting that controlling the virus from spreading has been a major challenge, it said the study was conducted on the efficacy of various non-standard and standard face masks under the act of sneezing.

The study, conducted by Dr Venugopal Arumuru, Assistant Professor, School of Mechanical Science (SMS), and his team, confirmed that without protectives measures like a face mask, the smaller droplets expelled during a sneeze can travel up to 25ft in a stagnant environment.

It confirms and also recommends a social distancing of 6ft from all orientations to prevent transmission of COVID- 19.

'In the COVID-19 scenario, the present study will improve the understanding of smaller droplets/particles dynamics in turbulent flows, which causes transmission of the virus. These visualisation results will bring awareness to wear a mask and maintain social distancing for the general public,' it said.

Prof R V Raja Kumar, Director, IIT Bhubaneswar, said the faculty and students groups of the Institute have worked tirelessly during the COVID-19 pandemic by coming up with technology development and research studies of high societal relevance.

Congratulating the team for conducting such focused studies on present societal relevance, Prof Raja Kumar said the current study is a step in this direction. 'As well known, the spread of COVID-19 infection is mainly through droplets ejected during coughing, sneezing, and talking. The present study shows how smaller droplets can leak through various protectives measures. The importance of social distancing is clearly evident from this study,' he added.

These results will not only spread awareness but will motivate researchers to bring innovation to face mask design.

I would like to reiterate that our researchers at IIT Bhubaneswar will continue to focus on COVID-19 related research and development to help mankind in the ongoing fight against the pandemic,' Prof Raja Kumar said.

Prof Sujit Roy, Dean R & D, IIT Bhubaneswar says, 'The finding by the IIT Bhubaneswar team is expected to create new awareness on COVID-19, which will further help in preventing its transmission via community spread.' Dr Mihir Kumar Pandit, Head of School of Mechanical Sciences, IIT Bhubaneswar says, 'The present study has come out very nicely in visually highlighting the escape of droplets from various non-standard masks, which is widely used. Hence, the results will bring awareness to the common public.' Dr Arumuru said 'Our flow visualisation study shows how smaller particles escape from the various face masks and how far they travel during sneezing. The importance of social distancing is visually evident from this study, which will educate the general public on the importance of the face mask and social distancing to prevent transmission of COVID-19.' He said 'Our proposed simple experimental setup can be used to test new face mask designs. The sneeze is simulated at the exit of the nose of a standard mannequin, using air and tracer particles.' The peer-reviewed article has been selected as a 'Featured Article' in Physics of Fluids Journal by the American Physical Society, the release added. PTI SKN RG RG

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