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Experts advocate need for safe breathable masks amidst WHO's recent guidelines on airborne transmission of COVID-19

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Against the backdrop of N95 masks being sold illegally without any quality or price control mechanism, experts have advocated that masks besides satisfying the criteria of safety should also take care of breathability with reference to WHO's recent guidelines on airborne transmission of COVID-19.

N95 masks can be hot and humid on the face and recent research has found that when one wears an N95 mask, one can breathe in 5% to 20% less oxygen than normal unfiltered air and higher proportions of carbon dioxide being exhaled in the process.

"The efficacy or filtering performance is strongly dependent on the fitting of the mask and healthcare personnel should test different devices to find best fitting model and size for their face. Presence of leakages is detrimental to the wearer. These specialized masks or respirators are more expensive than surgical masks and healthcare facilities may have the limited resources to procure the same. Additionally, supplies of genuine N95 masks are rapidly running out not only in India but across the world," according to Dr Nitin Malekar, microbiologist and healthcare communication professional.

Surgical mask may be effective in blocking splashes and large particle droplets but may not filter or block exceedingly small particles in the air that may get accidentally transmitted by coughing, sneezes or certain surgical and medical procedures. Surgical masks may not provide comprehensive protection from pathogens and other toxins because of its loose fit on the wearer's face, Dr Malekar further added.

He suggested that filtering facepiece respirators (FFR) are the 'tight-fitting' and 'disposable' protective devices, which are specially designed to filter airborne droplets (particles < 5 µm in diameter). FFR are tested at a high flow-rate (85-95 L/min) and with test aerosol of around 0.3-0.5 µm in diameter. N95 masks are with FFR 2 clearance. As per US FDA, this mask must be worn with eye protection and complete PPE.

Explained infectious disease specialist Dr Neeraj Kumar Tulara, "There are two types of masks - medical mask and non-medical mask. Medical mask is mainly N-95 mask, which means it prevents at least 95% of organism from getting inside the mask. Medical mask has to be used only by health care workers, COVID-19 patients, people giving care to COVID-19 patient, symptomatic COVID-19 suspects and people who have comorbidity or age more than 55 years."

He further added, "Rest of the people should wear non-medical mask. Ideal non-medical mask should consist of 3 layers - an inner layer of absorbent material such as cotton, middle layer of non-woven material such as polypropylene and outer layer of non-absorbent material such as polyester. These non-medical masks will take care of both aspects to wearer as he will not be able to spread infection and also will not get the infection from outside. Fabric mask are more breathable than N-95 mask but protection is better on N-95 mask."

"All the masks even N95 mask with valve should be strictly discouraged as they can only protect the wearer but others are not protected since it has one side valve and all the secretions from the wearer can come out in the air," Dr Tulara cautioned.

Amidst rising concerns over airborne infection, Kanpur based Lohia Health is also today offering SilverPRO self sanitizing face masks coated with European nano silver formulation that kills bacteria and viruses in contact ensuring complete safety.

Explained Saumya Lohia Agarwal, head of strategy, Lohia Health, “Lohia Health found that there were two ends to the spectrum of mask producers for consumers. N95 masks - safe but not breathable; cotton masks - breathable but not safe. We wanted every citizen to have the right to breathe safely. The company reached out to the extensive distribution network across Europe and found a lab creating a special nano silver formulation.”

SilverPRO mask is a 4-ply organic cotton non- medical mask designed with special silver chemical solution coating to make it as effective as an N95 mask yet enabling it to have high breathability. These masks are 100% biodegradable and use melt-blown fabric for bacteria filtration.

“Plain cloth masks do not even prevent bacterial filtration unless they are 4 ply with most in the Indian market only being 3 ply. Manufacturing of these masks is being done primarily in India. Only the formulation is from Europe. We are providing employment to small textile industries which were ready to shut doors during the COVID-19 pandemic,” Saumya concluded.

Giving his views on the subject, Ahmedabad based pharma consultant Dr Sanjay Agrawal said, “Widespread use of masks by healthy people in the community setting is not yet supported by scientific evidence and there are also potential benefits and harms to consider. Now to deal with the new theory of coronavirus spreading through air borne transmission as well as the difficulty in physical distancing, governments should encourage general public to wear masks in specific situations and settings as part of a comprehensive approach to suppress COVID-19 transmission.”