

Review article

The Role of Surgical Masks or Respirators to Prevent Coronavirus

Sahaj Sabharwal¹, Kaynat Nadeem², Muhammad Asif^{2*}

¹ Faculty of science, Delhi Public School, Delhi India

² Institute of Energy and Environmental Engineering, University of the Punjab, Lahore-54000, Punjab, Pakistan.

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* **Muhammad Asif**: Institute of Energy and Environmental Engineering, University of the Punjab, Lahore-54000, Punjab, Pakistan.

Mobile phone: +923047092647. **Email:** 03047092647asif@gmail.com

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ABSTRACT

The world is suffering from the deadly infection of Coronavirus. The World Health Organization (WHO) has declared the infection as 'pandemic'. The early symptoms of this deadly infection are high fever, shortness of breath, tiredness and dry cough. So, the entire world is under lockdown to break the chain of COVID-19 with certain precautionary steps is to be ensured. The contemporary ways to sanitize oneself is the 20 seconds formulae of hand wash or using disinfectant containing at least 60% alcohol, avoid touching surfaces and handshakes and no unnecessary contacts. The use of mask and covering face using napkin or elbow while coughing and disposing the napkin would add an added advantage. This review article highlights the role of surgical mask and respirators for controlling this outbreak.

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INTRODUCTION

We all know that sanitizer containing good quality alcohol can kill most of the germs, bacteria and viruses including fatal coronavirus. In a previous research, it was found that the coronavirus can survive for 3 days (72 hours approx.) on surfaces like steel or plastic. Now, the question arises whether any face masks or covering mouth with any cloth helps to prevent coronavirus from invading our body?

They act as a barrier to prevent the foreign body from entering our body, but the main difference between them is that surgical masks are used only to

prevent dust particles or large particle droplets that enter through our nose or mouth while respirators can prevent vapors, airborne microorganisms, fumes or particulate matter that enter through nose or mouth. But as we know that the virus can enter our body through eyes so the person wearing spectacles or goggles can help prevent Covid-19 to enter body to some extent. As spectacles or goggles are left open from its sides so virus can reach our eyes easily. Hence, it is advised to stay at home and take precautionary steps while stepping out of home. The frontline workers including police, media persons,

essential service and sweepers wear face shield along with N95 masks to safeguard themselves.

Role of Surgical Mask

Surgical masks are mostly used by people who are not into any essential services as these are not designed to protect the wearer from breathing in airborne bacteria or viruses. Coronavirus is smaller than the PM 2.5 cut off but bigger than some regular dust particles and gases [1]. These masks can be used by a person with weak immune system or suffering from chronic health diseases. Persons dealing with severe respiratory or breathing issues are more prone to get infected from coronavirus, hence it is advisable for the infected person to use face mask as well in order to protect others from getting infected. The use of masks is also recommended to healthy person from getting infected. Surgical masks are of three types:- 2-layered surgical mask, 3-layered surgical mask and 6-layered surgical mask.

Efficiency of Masks

The protection also depends on the number of layers, more numbers of layers contribute more protection. A 3-layered mask is better than 2-layered masks, the cost of 3-layered mask is also higher than 2-layered mask. While the 6-layered masks are best till now as it can protect us from some of the viruses but cannot protect from SARS CoV-2 to enter the body. This type of mask is loose-fitting and virus can easily enter through the opening sides [2]. One more drawback is that it is not having any particular side from which a person has to wear it. So as a human it's common to make mistake and use different side to wear while reusing, keeping it anywhere after using can spread risk of virus at that particular place and without knowledge of its proper way of wearing help the virus to enter the body. Also, the outer layer of the mask consists of virus and accidental touching can lead to the novel coronavirus.

As mostly surgical masks tend to be disposable, it get wet due to water vapours generated during respiration, that means they need to be replaced with new mask or washable 6-layered mask, washing it with 60°C hot water with a disinfectant to kill the germs can help in reusing them.

Respirators

Respirators are used by health professionals as they are having contact with infected person quite often. These are at a risk of getting contaminated by infected person that's why they use it along with face shield to be more secure from the coronavirus. N95 mask is most common respirator consisting of filters that can prevent 95% i.e 0.3 microns airborne particles [3]. It is a type of mechanical filter respirator and is better than any type of surgical mask. Respirator is tight fitting and have no opening, it protects in a better way. It protects us from most of the viruses which enter from mouth or nose openings but still protects against SARS CoV-2 to small extent. When someone around us coughs or sneezes then the germs or droplets exhaled can stick on a person's clothes or long hair especially in women, so the hair must be covered with a cloth while going out and changing clothes after coming back to home is recommended. For men too keeping a long bushy beard and facial hair are also prone to coronavirus so best way is to avoid going out or to keep short or no beard on face or clean it after every outside tour. It contains valve which releases unfiltered air when the wearer breathes out, hence the spread cannot be stopped just by using respirator.

Efficiency of Respirator

So along with respirator, using a sanitizer is a must, to clean our hands from time to time. A respirator cannot be reused and after a particular time period of usage, it becomes difficult for us to breath through it and it indicates the time to replace or dispose after use. Most of the doctors and nurses who are curing the Corona patients use surgical masks, face shield, Personal

Protective Equipment (PPE) kits and respirator to get best protection. No doubt, for full day wearing cause skin irritation and problems especially in the summer season, discomfort due to sweat on the human body, but still to save life and to contribute the nation, the corona warriors are doing their best work to keep us safe during this crucial period.

CONCLUSION

Therefore, for the common people, the best way is isolation and social distancing. Mask is better than no mask. A common man must keep physical distance from everyone and use sanitizers to kill the microorganisms on hands and wrist. Infect, if we apply some sanitizer over the mask before using then the germs which stick will be killed at the moment and the mask will be more risk free. And if a person is having any symptoms of COVID-19, then he much contacted the health care team or can go to a hospital. As prevention is better than cure, all things must be kept in mind to fight this virus. If tested positive than, can get cured. Either the person has good immunity or should intake healthy foods for boosting immune system, for example, citrus fruits, broccoli, garlic, ginger, spinach, curd and almonds are best immunity boosters, drinking plenty of normal water everyday also help in keeping our body fit. Immunity system helps in recovery. If we, common people maintain social distancing and use just any cloth mask or scarf or just simple 3-layered or 6-layered, it is enough with respect to follow all precautionary measures then there will be no problem as such balefully.

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Authors Contribution

All authors contributed equally in designing, data collection, assimilation and writing of this manuscript and the final version was read and approved by all authors.

Conflict of Interest

The authors declare no conflict of interest.

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