



Global Use of Face Masks for Victory against Covid-19

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Abstract

The use of the face mask always reduces the transmission of COVID-19 rapidly. This article is written on some things those are related COVID-19 and absolutely face mask. Here we discussed little about transmission process of COVID-19, filtering materials of masks, benefits of using masks, thoughts of people using mask, Governments policies about concerning of mask and route of the transmission of COVID-19 by presymptomatic and asymptomatic individuals. There are specific two general ways to reduce the pandemic; first, maintaining the social distance, frequent hand washing, self isolation. Second, use the face mask properly in public and maintain the proper guideline. It is proved that mask wearing reduces the transmission of the virus by reducing transmission of harmful infected droplets. Here we give protection to our health by using low cost intervention tool like mask. So, we should request people to wear mask and maintain the proper guideline and absolutely it will reduce the spread of the disease.

Keywords: Mask; COVID-19; N95 Respirator; Pollution

Introduction

It is a sincere issue that always a guideline is needed for common people to use masks properly. Mask is a tool that combats SARS-CoV-2 virus which causing COVID-19 [1]. Now mask is globally used to reduce the disease and also effective in source control. There are many masks in market but we will emphasis on cloth mask, surgical mask and N95 respirator. There are many countries now manufacture masks for delivering it to the people. Common cloth masks are now a global solution that is used by lots of people around the world. Many countries recommended the cloth mask for their people.

Route of Transmission of COVID-19

The primary routes of transmission are speaking, coughing, sneezing via small droplets. The size of the droplets commonly range from 5-10 micrometer [2]. Talking is an important route to transmit the virus rapidly. A huge amount of droplets are exposed when someone speaks loudly. Now

there are many asymptomatic patients are detected and all have pre symptomatic incubation period ranging from 2 to 14 days [3]. Asymptomatic patients are more dangerous because they don't have any symptoms or mild complication. SARS-CoV-2 virus differentiates itself from SARS-CoV by early activation in the upper respiratory tract and viral level is high in asymptomatic or presymptomatic patients [4].

Filtering Mechanisms Control Viral Transmission

There are many masks with different designs present in the market [5]. They can be made of different materials. N95 (American standard) and FFP2 (European standard) respirators are recommended for the clinical workers. But in this situation N95 respirators are not available in all regions or all centres. Alternatively used surgical masks for the droplet protection. It is also effective for source control [6]. Everyone should wearing masks for decreasing the chance of viral transmission by them unconsciously. Here a measurement between cloth mask and surgical mask;

when someone is speaking then expelling lots of droplet size 1 micrometer [7]. Normal cloth masks filtrate 45%-86% droplet for 0.02 micrometer and surgical masks filtrate more than that of cloth masks near about 89%. Another tea cloth mask found to filtrate 60% when droplet ranging from 0.02-1 micrometer [8]. Always N95 respirators are not available in the market but there are many cloth and surgical masks

are available which have a partial effect in reducing viral aerosol shedding (Table 1). There are many laboratory based proof that house hold cloth mask can filtrate relevant droplet sizes and also blocking the droplets from the wearer. So, cloth masks are always helping common people to keep the droplets to themselves [9].

Type	Source control	Inhaled air filtration
Cloth face mask	Some but effective	Bad
Surgical mask	Good	Bad
N95 respirator without exhaust valve	Good	Good
N95 respirator with exhaust valve	Bad	Good

Table 1: Comparison of face masks by function [10].

Efficiency of Different Masks

Moderate certainly evidence shows that washing hands, mask wearing probably reduces the transmission of respiratory viruses [11]. A cotton mask blocked 96% of viral load on average, at eight inches away from a cough of a patient [12] (Figures 1-4). A comparison is made between homemade mask and surgical mask; surgical mask is three times more effective in blocking the droplets. So, all masks are more or less effective to prevent the transmission of viral infections [13].



Figure 1: Simple cloth mask.



Figure 2: Surgical mask.



Figure 3: N95 respirator with exhaust valve.



Figure 4: N95 respirator without exhaust valve.

Health workers are strictly recommended to use N95 respirator and surgical masks [14]. Many scientists are expressing their views on these two types of masks. Radonovich, et al. [14] found that no such differences between surgical mask and N95 respirators in case of influenza disease. There has been a shortage and relatively high cost of N95 respirators, simple cloth mask may be a

pragmatic alternative tool for preventing disease.

Some Thinking about Wearing A Mask

Many sick people are reluctant to wear mask. They show the reason that if they wear a mask, they are identified as sick and isolated from their society. So, they are not wearing the face mask to avoid stigma of illness [15,16]. Stigma is a bold, powerful thing that many illnesses come with stigma for the sick. It is very essential to manage the stigma for controlling the epidemics. Sometimes stigma leads to people avoiding treatment [17]. Some people are reluctant to wear mask during pandemic because they think that they will be found as a criminal in front of public.

Benefits of Face Masks Against Epidemics

Cloth masks have not been shown to increase the spread of virus in public place. But people who does not wear mask, can spread the virus. Tuberculosis kills approximately 1.5 million people globally in every year and in 2018 near about 10 millions of people are attacked by tuberculosis [18]. There has been shown face mask also reduced the spread of the disease. Mask wearing is a primary non pharmaceutical intervention to reduce the secondary transmission of viral upper respiratory infections [19].

Impact on Population

The standard epidemiological measure of spread is known as net reproductive rate R_0 . Local intervention like face mask can effect on the reproductive number of the epidemic. The main aim of any healthcare authority is to have aggregate effect of reducing R_0 to below 1. Much common intervention can reduce the reproductive number by using face mask. The reduction of R_0 by a factor $(1-ep_m)^2$, where is efficacy of mask for viral trapping and p_m is the percentage of population that wear masks [20].

Conclusion

Widespread mask use reduces the community transmission. Non-medical mask use material that obstruct droplets necessary size. Common homemade face mask have been shown to be effective in small trials at blocking transmission of corona virus [21]. Much protective measure like social distancing, frequently hand washing and use of face mask can potentially reduce R_0 to below 1. We hope that mask use requirement is implemented by Governments and other Nongovernment organizations. It is very important for health authority to provide a proper guideline to people for making, using, and sanitization, re-using and washing of face mask. These proper guidelines help the community to reduce such pandemic.

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