Unmasking the Need for Masks during the COVID 19 Pandemic: A Review Article

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INTRODUCTION

The end of 2019 took the world by storm; a novel disease had begun to spread like wildfire. Little was known about the disease, let alone details such as route of transmission, incubatory period, or reproduction number. Eventually, many of these questions were finding answers. Yet, numbers were soaring, and each day bore another dismal tiding. Before China could seal down the affected areas, similar cases were cropping up in other countries.

Non-pharmaceutical interventions are strategies that are adopted by communities and individuals who are both well (to reduce exposure and avoid infection) and unwell (to avoid affecting others). Mobility restrictions, physical distancing, reducing public transport, and limiting social gatherings are few of the non-pharmaceutical measures undertaken by the governing bodies across the globe.

In a bid to out-run the virus, the frenzied public bought masks and sanitizers by the dozen thus forcing stores to run out of stock. This sky-rocketed prices of masks even before official guidelines from major health organizations could be released. It created a crisis among healthcare personnel, who needed it the most.

According to the Centers for Disease Control and Prevention (CDC) the N95 respirators, although disposable, can be reused up to 5 times. Triple-layer surgical masks, normally used in healthcare, can filter up to 80% of the particles.

It is widely agreed on that the respirators have to be reserved for health-care professionals. There are clear directives regarding the use of masks by health-care professionals and symptomatic individuals; however, till recently, regulations regarding the use of masks among the general public during the current pandemic was somewhat ambiguous.

Newspaper articles have speculated that, in addition to the cluster-based approach in Japan and mass screening in South Korea, much of the success in managing the coronavirus (CoV) disease (COVID) 19 pandemic may be attributed to the customary usage of facemasks. Furthermore, they usually maintain distance even while greeting each other, unintentionally practicing physical distancing.

In this article, we attempt to answer the elephant in the room, “Is it practical to use masks in the community to mitigate the COVID 19 pandemic?”

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ABSTRACT

Panic seized the world as the coronavirus (CoV) disease 19 pandemic ushered in the New Year. Non-pharmaceutical interventions are strategies that are adopted by communities and individuals who are both well (to reduce exposure and avoid infection) and unwell (to avoid affecting others). Mobility restrictions, physical distancing, reducing public transport, and limiting social gatherings are few of the non-pharmaceutical measures undertaken by the governing bodies across the globe.

In conclusion, cloth masks may be used by the public, and other masks and respirators should be reserved for frontline workers. This non-pharmaceutical intervention, when used in conjuncture with hand hygiene and physical distancing, could potentially flatten the curve.

Key words: Cloth-masks, Coronavirus disease 19 pandemic, Mass masking
USE OF MASKS DURING AN OUTBREAK

“Mass masking” is the usage of masks by seemingly healthy individuals of the community. Although skeptical of the move, the interim guidelines issued on April 6, 2020, the World Health Organization (WHO) agreed that this strategy would play a role in:

- Source control (preventing the transmission of the virus by asymptomatic/pre-symptomatic individuals) and
- Destigmatization of symptomatic patients who wore masks.

In 2019, the WHO conducted a workshop in which they reviewed the use of masks to deter the impact of the influenza pandemic. It was concluded that in spite of the lack of evidence regarding the effectiveness of masks in reducing the progression of the pandemic “there is mechanistic plausibility for the potential effectiveness of this measure.” It also recommended the use of masks in public during a severe pandemic.\[17\]

With regard to using face masks in the community a comment was published in The Lancet, which stated that, “the absence of evidence of effectiveness should not be equated to evidence of ineffectiveness.”\[18\]

MASKS AMONG OTHER STRATEGIES

Two randomized trials, one by Cowling et al.\[19,20\] and the other by Larson et al., comprising three interventional arms were carried out with regard to influenza pandemic of 2009. The first arm was health education, the second arm was hand hygiene, and the third was the use of masks and hand sanitizer. Both studies showed that the third arm was more effective than the first two. This goes to show that usage of face masks contributes to interrupting the transmission of respiratory droplet infections when used in association with hand hygiene.

CHALLENGES OF MASS MASKING

Mass masking is a double-edged sword, and just like any other strategy, it has its cons. The June 5, 2020, interim issue by the WHO listed a few disadvantages, some of which are detailed as follows:\[21\]

- Especially in diseases that have more than one route of transmission, a false sense of security could creep in with the use of facemasks, leading to decreased adherence to other preventive measures such as physical distancing and hand hygiene
- Improper donning and doffing practices could lead to self-contamination that can occur by touching and reusing contaminated mask.

These issues can be addressed by imparting health education to the public. They need to be taught the correct methods of donning and doffing. It needs to be reinforced that the use of face masks is not a substitute for physical distancing and hand hygiene.\[22\]

Some studies show that the adherence to facemasks is low. However, using the theories of “Planned Behavior” and “Protection Motivation” the perceptions regarding the use of masks can be steered to increase one’s protective behavior and improve adherence.\[1,23,24\]

It is not recommended that children under the age of two use masks as adequate filtration cannot be achieved.\[25,26\]

If cloth masks deter breathing while performing high-intensity exercises, CDC, Atlanta recommends that these activities be conducted in open ventilated areas with physical distancing.\[27\]

EFFECTIVENESS OF HOMEMADE MASKS

To be better prepared for outbreaks of respiratory infections, Brienen et al. created a population transmission model to explore the impact of population-wide mask use. It estimated the effects of mask efficacy and coverage (i.e., number of individuals who use masks) on the basic reproduction number and the infection attack rate of the influenza virus. They concluded that population-wide use of face masks could play a key role in delaying a pandemic. Mask use also reduces the reproduction number, possibly even to levels sufficient for containing an influenza outbreak.\[28\]

Opportunistic data collected during the severe acute respiratory syndrome (SARS) epidemic (2002–2003) in Asia suggested that population-wide use of face masks may significantly decrease its transmission.\[29,33\] In fact, there was a dose-response effect with regard to the consistency of wearing masks in the 2 weeks before the onset of symptoms. Those who consistently used the mask had a 70% lower chance of being diagnosed with SARS, while those who used masks intermittently had a 60% lower risk.\[29\]

The size of the CoV is 0.05–0.2 µ in diameter.\[14\] Single layered homemade cloth masks (made of 100% cotton) can filter about 50% of particles between 0.02 and 1 µ in size, while a double layered mask filters about 70%.\[15\] However, cloth masks made of tea towels captured about 60% of particles between the same size range.\[23\]

CDC guidelines recommend a “Do It Yourself” double-layered cotton mask\[26\] while the WHO recommends triple layered cloth mask\[12\] to be used by the public. The cloth masks have to meet the following criteria\[26\]

- It should be snugly fit
- Easily secured with ties or ear loops
- Two layers of fabric should be used
- The mask should allow for easy breathing

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CONCLUSION

While using masks may reduce the likelihood of the infection with SARS nCoV-2, there is always a possibility of contracting the disease, particularly when there is more than one route of transmission.[15] Thus, it is of utmost importance that usage of masks be supplemented with the other non-pharmaceutical interventions such as – avoiding unnecessary touching of the eyes, nose, and mouth, hand hygiene, cough etiquette,[40] physical distancing, refrain from social gatherings,[41] and isolation and quarantine.[42] Mass making is a typical example of the “prevention paradox,” where it offers some benefit to the individual and heaps of benefit to the community, particularly in settings where physical distancing poses as a challenge.[36]

The benefits of mass masking a community out-weigh the risks. If triple-layered cloth masks are adopted for public use, there will be an adequate supply of triple ply surgical masks and N95 respirators for frontline workers who are in dire need.

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