



Facemasks and the Covid 19 pandemic: What advice should health professionals be giving the general public about the wearing of facemasks?

Many of us have been watching with increasing concern as the numbers of cases and deaths rise from the SARS-CoV-2 virus causing COVID-19. There has been public concern and anxiety, which has led to the panic buying of facemasks although facemasks are not recommended for healthy individuals but are essential for health workers and those with the illness. In this editorial, we will discuss the evidence for the use of facemasks and argue that inappropriate use of facemasks may cause harm and leads to shortages for those health workers who most need them.

Many news reports on the virus open with a photograph of an official or members of the public wearing a surgical mask, and many people are buying stocks of masks and wearing them when they are out in public. Disposable masks or surgical masks are loose-fitting devices designed to be worn by medical personnel to protect accidental contamination of patient wounds and to protect the wearer against splashes or sprays of bodily fluids (US Food and Drug Administration, 2018). However, masks do not filter or block microscopic particles in the air that may be transmitted by coughs or sneezes because of the loose fit between the surface of the facemask and the face (US Food and Drug Administration, 2018).

By mid March 2020, at least 3,300 healthcare workers have been infected with COVID-19 in China alone and 22 had died; the actual figure is likely to be far higher (Wang, Zhou, & Liu, 2020). One study of 138 patients with COVID-19 reported that 29% were healthcare workers: one patient admitted to a hospital in Wuhan infected more than 10 medical workers and four other patients (Wang et al., 2020). The reason given for the high rate of infection among healthcare workers is harsh working conditions and a lack of personal protective gear. Hospitals resorted to pleading on social media for more protective equipment (Gan, Thomas, & Culver, 2020). Medical staff during the height of the crisis in Wuhan had only one protective suit per day and were forced to wear diapers because they could not change their protective gear for as long as 12 hours. The numbers of health professionals falling ill have obviously led to further shortages, and one Wuhan physician was quoted as saying, “just a very rough estimate, 100 nurses and doctors can look after 100 ordinary beds and 16 ICU beds. If they are sick, not only do they occupy 100 beds, but the staff taking care of 100 beds are

gone. That means a hospital loses the capacity of 200 beds” (Ma, Zheng, & Pinghui, 2020). In the light of this, China's National Health Commission's warning to health professionals to make “reasonable use” of protection gear warning against “excessive and disorderly use” (Frias, 2020) seems unreasonably harsh.

The same issues are being seen across the globe as the pandemic spreads: more than 2,000 Italian health workers contracted the disease, and there have been many deaths partly as a result of a lack of availability of personal protective equipment (International Council of Nurses, 2020). It is a similar story in Spain with over 5,400 health workers infected as of the end of March 2020 – nearly 14% of the total infections in that country (Minder & Peltier, 2020).

Panic buying of masks has resulted in shortages across the world. Over 10,000 people queued up for masks in Hong Kong, with one woman waiting for over 18 hours, and another reported that she had used the same mask for over 5 days (Huang & Tong, 2020). A shipment to Hong Kong was deemed so valuable it had an armed escort (Woodhouse, Kuchler, & Liu, 2020). The World Health Organization's Director General Dr. Tedros Adhanom Ghebreyesus said that, as a result of the COVID-19 outbreak, demand for personal protective equipment was 100 times higher than average and prices had risen to 20 times higher, resulting in global stocks of masks and respirators being insufficient to meet supply (Boseley, 2020). He went on to say that there were delays of 4 to 6 months in supply and that the shortage was due to “widespread inappropriate use” by those who were not ill or not medical staff. One consequence is that the second-worst hit city in Hubei province faces a shortfall of 24,000 of protective gear, 60,000 masks, as well as 15,000 goggles and face shields (Frias, 2020), and there are people in the streets wearing the N95 mask and other professional masks that healthcare workers need. Dire shortages of facemasks for frontline emergency and health workers are now being experienced worldwide.

Videos have emerged from Wuhan, the epicenter of COVID-19, of the Chinese government using drones to admonish people for not wearing masks (Pietsch, 2020) and villagers have taken to the same tactics: this clip shows a woman being scolded by a man operating a drone in an Inner Mongolian village (<https://www.youtube.com/watch?v=-nN7k0Rc9U>). Ironically, the wearing of masks has hindered

efforts to trace suspected carriers because the surveillance technology cannot recognize faces (Chen, 2020).

1 | DIRECTIVES ABOUT FACEMASKS

Despite the advice from the WHO (2020) that frequent handwashing with soap and water or use of an alcohol-based hand rub is the primary means of prevention along with respiratory hygiene, maintaining social distance, and avoiding touching the eyes, nose, and mouth, many organizations outside of health are advising mask use. For example, across Japan, hotels, transport, and retail staff wear masks and, frequently, this is a company directive. And All Nippon Airways (ANA), Japan Airlines (JAL), and Japan Railways (JR) have explained that staff wears masks “to provide safe services for customers,” among other reasons. In some other cases, the request to wear masks has come from employees, for example, the Association of Flight Attendants-CWA, which represents flight attendants from Hawaiian and more than a dozen other airlines, is asking airline to allow flight attendants to wear masks on flights to and from Asia (Oliver & Thompson, 2020). To date, there has been mounting anger as the airlines have refused this request citing the Centers for Disease Control and Prevention (2019) policy that that facemasks should only be used by airline crew members when they “are helping sick travelers with respiratory symptoms such as coughing or sneezing.” Facemasks are also advised for sick travelers and those sitting near passengers with respiratory conditions.

More concerningly, some health professionals and government organizations have misconceptions about mask efficacy: for example, the Thai health minister is strongly advocating the use of face masks contrary to WHO advice, and health officials in many Asian countries have required the general public to wear masks (Boonbandit, 2020; Tufekci, 2020).

2 | THE EFFICACY OF FACEMASKS

So, is wearing a mask likely to be preventive? Experts tell us that it is less useful than frequently washing hands. The WHO director general recently pointed out that masks were not always beneficial for the healthy general public, “masks don't necessarily protect you, but they do – if you have the disease – stop you from giving it to anybody else” (Boseley, 2020).

Authors of a recent systematic review of 10 randomized controlled trials found limited evidence for face mask effectiveness in preventing influenza virus transmission either when worn by the infected person to avoid transmission or when worn by uninfected people to reduce exposure (Xiao et al., 2020), although the evidence is not uncontested (MacIntyre et al., 2009).

Experts at the US Centers for Disease Control and Prevention and WHO question whether masks are an effective way to prevent transmission of the disease and state that mask use is only advised if you are taking care of a person with suspected 2019-nCoV infection or coughing or sneezing (WHO, 2020).

3 | INAPPROPRIATE USE OF MASKS

Not only are facemasks used for inappropriate situations, but they are also frequently used incorrectly and thus can *increase* the chance of transmission because of moisture retention, poor filtration, and reuse (World Health Organization, 2009). Facemasks are intended to be used only once; if the mask is soiled, then it should be carefully disposed of in a plastic bag and the user should wash their hands after handling the used mask (US Food and Drug Administration, 2018). If masks are moved to one side for eating, talking, talking on the telephone, smoking, or breathing easier, they also become ineffective. Putting a hand underneath the masks to scratch your face will introduce contaminants. Masks should fit correctly according to the manufacturer's instructions and be from a reputable vendor. Health workers should be trained in correct procedures for “donning and doffing,” and most people do not follow the procedures.

Summing up evidence, Pawlowski (2020) notes that surgical masks are designed for surgeons to wear to prevent the transmission of pathogens from their nose and mouth to the surgical field; they are not intended to avoid viruses being inhaled through the mask. Neither are they designed to be worn for extended periods as many of the general public do.

The shortage of masks has led to a range of inappropriate and potentially dangerous ways of covering the nose and mouth. Children and adults in China have used plastic bags to cover themselves and resorted to other desperate measures such as wearing plastic bottles over their heads, ski masks, and even sanitary towels. More frequently seen are cloth masks or scarves used as a mask, and there is no compelling evidence to suggest that these are effective although the CDC are now advocating the use of cloth masks.

4 | THE IMPORTANCE OF HANDWASHING AND SURFACE CLEANING

Knowledge about the SARS-CoV-2 virus is rapidly evolving, but it is thought that the virus is transmitted through droplets, direct contact, and by coming into contact with contaminated surfaces and it is *not* known to be airborne and cannot circulate through the air (United Nations, 2020). The respiratory droplets may travel up to 6 feet from someone who is sneezing or coughing. Bai (2020) cites Chiu, an infectious disease expert who states that “If you have an infected person in the front of the plane, for instance, and you're in the back of the plane, your risk is close to zero simply because the area of exposure is thought to be roughly six feet from the infected person.”

Authors of a recent systematic review concluded that most viruses from the respiratory tract, such as corona, influenza, or SARS, can persist on surfaces for a few days and can thereby be a continuous source of transmission if no regular preventive surface disinfection is performed (Kramer, Schwebke, & Kampf, 2006). The SARS-CoV-2 virus resembles other human coronaviruses, such as those that cause SARS and MERS, and can stay on surfaces – such as metal, glass, or plastic for as long as 9 days but can be efficiently inactivated by surface disinfection procedures with 62–71% ethanol, 0.5% hydrogen peroxide, or

0.1% sodium hypochlorite within 1 minute (Kampf, Todt, Pfaender, & Steinmann, 2020).

5 | THE MEDIA'S ROLE

The extensive media reporting and frequent use of pictures of people wearing masks may have had a role in fueling the mask-wearing frenzy, but there have been many articles with sensible, evidence-based advice cautioning against a reliance on masks and instead washing hands frequently in soapy water, using correct etiquette when coughing and sneezing, and avoiding touching the face and referencing reliable sources for the information they give (Boseley, 2020; Secon, 2020).

6 | CONCLUSION

The CDC director said, "I think this virus is probably with us beyond this season, beyond this year, and I think the virus eventually will find a foothold and we'll get community-based transmission and you can start to think about it like seasonal flu. The only difference is we don't understand this virus" (Moreno, 2020). We need to respond appropriately to the threat from this threat knowing that climate change, global interconnectedness, antivaccine sentiment, and a myriad of other factors leave us vulnerable to global pandemics and increasing infectious disease outbreaks (Global Preparedness Monitoring, 2019). Along with unknown viruses, we also need to manage the ones we know. In the 2019–2020 season, there have been at least 15 million cases of influenza and 8,200 deaths including 54 children in the United States alone (Guzman, 2020).

As health professionals, we need to be clear about what preventative measures we should take and about the advice we give the public. The primary advice for prevention is effective handwashing with soap and water for at least 20 seconds, rubbing the hands together, and avoid touching the mouth, nose, and eyes (WHO, 2009). Advice on mask wearing is changing almost daily during this pandemic: health professionals need to critically evaluate the latest evidence before passing information on to the general public.

The inappropriate use of masks has become a moral issue leaving frontline health workers without the necessary protective equipment. As health professionals, we have an obligation to model appropriate health behaviors and disseminate accurate health information based on current evidence that the use of surgical facemasks by the general public is not recommended unless they are looking after a person with a respiratory infection in a household setting or themselves have an illness. Far more effective is through handwashing and maintaining a safe distance from other people.

Resources

Centers for Disease Control and Prevention: Use of masks to control influenza.

<https://www.cdc.gov/flu/professionals/infectioncontrol/maskguidance.htm>

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirator-use-faq.html>.

World Health Organization: Advice for health workers.

https://www.who.int/docs/default-source/coronaviruse/who-rights-roles-respon-hw-covid-19.pdf?sfvrsn=bcabd401_0

World Health Organization: Advice for the public.

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/when-and-how-to-use-masks>

How to choose and wear a mask safely.

<https://www.chp.gov.hk/en/healthtopics/content/460/19731.html>

(https://www.chp.gov.hk/files/pdf/use_mask_properly.pdf;

<https://www.cdc.gov/hai/pdfs/ppe/PPE-Sequence.pdf>),

<https://www.hsa.gov.sg/consumer-safety/articles/guide-to-masks-and-respirators>

N95 Masks: efficacy and uses.

<https://www.newscientist.com/article/2231535-can-an-n95-face-mask-protect-you-from-catching-the-new-coronavirus/>

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