Title:
Importance of face masks for COVID-19 – a call for effective public education

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Summary: Debates on community use of face masks against COVID-19 stemmed out from differing views by health authorities, resulting in strong misconceptions and stigmatization. Effective behavioral changes in personal protective measures is required by teaching microbiological knowledge, not just the "dos-and-don'ts".

Abstract

Considerable debates about the general community use of face masks for protection against COVID-19 stemmed out from differing views taken by health authorities. Misconceptions and stigmatization towards the use of face masks may hinder the containment of the COVID-19 pandemic. We address this previous debate by analyzing the advice on the community use of masks across different credible health authorities: countries that promoted the use of masks acknowledged that masks are effective, but also explained the importance of their proper use along with other hygiene measures. In contrast, authorities that recommended against the community use of masks mainly cited shortage of supplies, the argument that the public do not have the adequate skills to wear them, or that wearing masks might reduce compliance with other important behaviors. We suggest promoting effective behavioral changes in personal protective measures by teaching microbiological knowledge instead of just listing out the "dos-and-don'ts".

Key words:
COVID-19, Face masks, Misconception, Public Health, Effective Education

This paper discusses the basis of the previous worldwide debate prior to April 6, 2020 on whether surgical face masks (also called medical masks) should be used in the general community for protection against the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that causes the coronavirus disease 2019 (COVID-19).[1] This debate stemmed from the previous guidelines issued by the World Health Organization (WHO) on the use of masks for prevention of COVID-19.[2,3] According to the earlier versions of WHO's guidelines, asymptomatic individuals in the general public need not wear medical masks unless they care for or had close contact with ill individuals. Public health authorities released similar statements subsequently in some Western countries on the use of masks (see Table 1). However, April 6, 2020 WHO softened their stance on the use of masks in healthy individuals, although their guidelines did not specifically recommend widespread use in community settings.[1] This paper also discusses what impact this debate had on the general public and whether a change in stance is adequate to promote behavioral changes.

We acknowledge that there are limited supplies of medical masks worldwide. Before going into the details of mask use in the community, it is important to first note that we should ensure there is a sufficient supply of face masks for use by healthcare workers. In addition, high performance respirators such as N95 masks should be reserved for healthcare settings where they will be used most effectively. However, it is inevitable that healthy individuals from affected areas start to opt for the use of medical masks when there is an increased evidence of community outbreaks, particularly now that the WHO softened their stance on their use. As of May 10, 2020, the outbreak of COVID-19 has resulted in more than 4 million confirmed cases worldwide in over 209 countries/territories, causing more than 280,000 deaths.[4] Infections spread from person to person in the community, and it is essential to identify and implement measures to reduce transmission to slow down or even stop spread. Protective behaviors and actions at the individual level can contribute to reducing transmission at the community level.[5]

However, confusion from previous public health guidelines has already resulted in stigmatization in Western countries towards the choice of using masks by many Asian communities as one of the means to prevent the spread of SARS-CoV-2. Research has shown that it is indeed a challenge for a conceptual change to occur when a strong medical misconception had rooted in the general community, as in the case of misinformation against vaccination.[6] There has been reports on both the continuous mistrust on the effectiveness of masks and the improper use of masks in the community. In order to comprehend the basis of the public's misinterpretations on the effectiveness of face masks, it is necessary to first understand the content of the original guideline published by WHO on prevention of COVID-19 in community settings on January 29, 2020.[3]

As summarized in Table 1, the original guidelines from WHO did not contradict the recommendations of public health authorities from China and some Asian territories that supported the general use of medical masks, particularly in crowded public space. In particular, WHO's guidelines did not state that mask use would be ineffective. In the earlier guideline, WHO also suggested the use of medical masks when an individual have respiratory symptoms and by medical staff.[3] However, the general community readily discredited the effectiveness

and the use of masks completely, due to an over-interpretation of WHO's earlier statements in the press.[3] The earlier guidelines also stated there was no evidence to support the effectiveness of medical masks for preventing infection in uninfected persons. Note that "lack of evidence that masks are effective" is not equivalent to "there is evidence to show that masks are ineffective" – while the statement is true on the lack of evidence to support the effectiveness of masks specifically towards SARS-CoV-2 due its recent discovery, this statement has been overinterpreted by the general public that masks are ineffective. As coronaviruses are respiratory infections, there has been extensive literature to suggest the effectiveness of masks in preventing the transmission of these viruses,[7] along with proper use by both infected and uninfected individuals.[8] Moreover, young healthy individuals often showed only mild respiratory symptoms, and there is evidence that infection can spread from people who do not show any symptoms.[8-10] Yet, without the use of masks and lack of proper hygiene, those who are carriers of the virus can easily spread it to others of close-contact who may be prone to developing severe symptoms.

The confusion on the effectiveness of face masks has been exacerbated following the seemingly inconsistent recommendations of medical mask usage by various health authorities at the earlier stage of the outbreak (also refer to Table 1). While some health authorities in the West previously conveyed to the public the message "do not wear masks, they are not effective if you do not know how to wear them, so save them for medical staff," many East Asian health authorities recommended the public to "wear masks, because they are effective but only if you know how to wear them properly…and here is how." However, the general public from areas where masks had not been worn in the local culture have already been primed strongly with the concept that masks are unnecessary and ineffective across all situations. Therefore, misconceptions must be clarified, allowing the general public to acquire adequate knowledge themselves on deciding when the appropriate situation is for using masks during mass outbreaks. Public health organizations should take the lead in providing effective education to the general community on the decision and proper ways to medical mask usage, together with other necessary hygiene practices (e.g. hand-washing). Previous statements that had been misinterpreted as a criticism on the use of masks should also be clarified to stop unnecessary stigmatizations.

Research in public health education established that effective behavioral changes in hygiene comes after conceptual change.[11] Establishing accurate hygiene concepts can be achieved effectively through teaching microbiological knowledge.[11] Therefore, the government and credible public health authorities may consider initiating simple but effective public education campaigns by incorporating Au and colleagues' suggestions that focus first on these basic facts in microbiology:[11]

i. Viruses are like living things and can be killed/destroyed despite not visible;
ii. Only 'live' viruses can make us sick if they enter our body;
iii. There are many ways to destroy the viruses (e.g. through heat and disinfectants) before they enter our body
iv. Viruses can enter our body through our eyes, nose, and mouth; if they don't enter our body, we will not get sick.

In addition to only listing out the “dos and don’ts”, establishing the above fundamental microbiology concepts in viral infections will promote critical thinking in the general public when they evaluate the appropriate hygiene measures under different situations. It is advised that the local governments and credible public health authorities in different nations start taking immediate actions to facilitate effective public health and hygiene education.

We can witness the comparatively low local infection rate in Hong Kong, Taiwan, and Macau, despite the proximity with highly affected areas.[4] One reason has been suggested to be the strong rapid community responses, including advocating for rapid school closures, stricter border controls, and isolation and quarantine measures.[5] Moreover, affected by SARS in 2003, the majority of residents in China and neighboring affected areas had already acquired health concepts to ensure the accurate use of masks and other proper personal hygiene measures. As of May 10, 2020, it is relieved that many countries have already adopted strict measures to ensure social isolation to stop the spread of SAR-CoV-2, given the low rate of medical mask usage. However, when the daily social lives of people in these areas resume, the use of masks properly (given its availability) can extend the prevention of community outbreak beyond these quarantine periods. The collective and appropriate actions from the whole community is what the world requires now to help contain COVID-19.

Neither author has any potential conflicts to disclose.

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Table 1. Summary of the earlier recommendations on medical masks use in the general community across different credible health authorities prior to April 6, 2020.

Source	Encourages community use of face masks?	Reasons/further notes provided?	Suggestions on the use of masks for healthy individuals under alternative circumstances?
WHO[1,2]	No	– Improper use may hamper its use – No evidence to support the effectiveness against COVID-19 of mask-use in the community	Use masks when: – When the culture has been to use masks – When the local government encourages their use – Upon close contact with infected/suspected/high-risk individuals
USA[3]	No	– Spread of SARS-CoV-2 is mainly through close contact – Stockpiling of masks may place a burden on the supply to medical staff	Use masks when:[4] – In workplaces of and upon contact with infected/suspected/high-risk individuals
Canada[5]	No	– Improper use may increase infection risks – May induce a false sense of security that that played down other essential hygiene measures	Use masks when: – When the culture has been using masks – when the local government encourages their use – Upon close contact with infected/suspected/high-risk individuals
UK[6,7]	Not Explicit*	Nil	Use masks when: – Upon close contact with infected/suspected/high-risk individuals
Australia[8]	No	– little evidence supporting the widespread use of surgical masks in healthy people	Use masks when: – Upon close contact with infected/suspected/high-risk individuals
New Zealand[9]	No	– Cited as suggestions from WHO	Use masks when: – In workplaces of contact with infected/suspected/high-risk individuals
France[10]	No	– Facemasks cannot be worn at all times	Use masks when: – Upon prolonged close contact with an infected individual.
Italy[11]	No	– Citing as suggestions from WHO – Increased the risk of infection due to a false sense of security and greater contact between hands, mouth and eyes.	Use masks when: – Upon close contact with infected individuals

Spain[12]	No	– Worn by people who are sick. – An inadequate use of masks can contribute to a shortage of them in those situations for which they are indicated.	<u>Use masks when:</u> – Upon close contact with infected individuals
Germany[13]	No	– Citing as suggestions from WHO	Nil
Singapore[14]	No**	– Only for sick individuals	Nil
China[15,16]	Yes	– The general community should make the judgment of mask-usage based the risk levels. – Masks are recommended in situations which include, going to medical institutions, in crowded open spaces, in a crowded or densely populated indoor environment, and close contact with people of quarantine at home	<u>Masks are not required:</u> – when you are at home (in isolation), engaging in outdoor activities or in well-ventilated indoor places
Hong Kong SAR, China[17,18]	Yes	- Recommended when taking public transport or staying in crowded place, clinics or hospitals visits. – Face mask provides a physical barrier to fluids and large particle droplets. When used properly, surgical masks can prevent infections transmitted by respiratory droplets.	Nil
Macau SAR, China[19,20]	Yes	– If it is necessary to go out, wear a mask at all times	Nil
South Korea[21]	Yes	– Wearing a mask can prevent infectious diseases	Nil.
Japan[22]	Yes and No**	– If you wear a facemask in confined, badly ventilated spaces, it might help avoid catching droplets emitted from others	<u>Masks are not required:</u> – If you are in an open-air environment, the use of facemask is not very efficient.

**Though the representatives from NHS (UK) have previously spoken again the use of masks through the press.*

***Despite ambiguous guidelines on the use of masks, Japan and Singapore ensured all citizens weekly rations of medical masks and banned of exports of medical masks*

Majority of the suggestions issued by governments from various affected regions did not argue that proper use of masks would be ineffective. Health authorities that initially discouraged the use of masks have also cited other valid reasons for its unnecessity:

1. In open space where people keep a distance from each other
2. When you are alone
3. When there is no outbreak in your region.

Health authorities from countries that promoted the use of masks acknowledged that face masks are effective, but also explained the importance of their proper use along with other hygiene measures. In contrast, authorities that recommended against the use of masks in the general community mainly cited shortage of supplies as well as the argument that the public do not have the adequate skills to wear them or that wearing masks might reduce compliance with other important behaviors.

Source:

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