

Coronavirus disease 2019 pandemic: what does wearing masks mean?

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After the outbreak of coronavirus disease 2019 (COVID-19), different measures have been taken to control the spread of the epidemic. Most international organizations, countries/regions have issued epidemic prevention guidelines or administrative guidelines, in which citizens are advised to pay attention to personal hygiene (such as washing hands frequently, covering the nose and mouth when sneezing), maintain social distance, and avoid gathering activities, and so on.^[1] However, it is noted that instructions on whether citizens need to wear masks and when to wear masks are inconsistent across various countries.

In China, compulsory face mask policies in public areas among both health-care workers and the general public have been enforced.^[2] Other countries in the East, such as Korea, Japan, and Singapore, have similar mask policies. However, most governments require only health-care workers to wear masks in the West. Therefore, we summarized the differences between the Eastern and Western mask policies, as shown in Supplementary Table 1, <http://links.lww.com/CM9/A280>.

First, different attitudes of Eastern and Western countries toward wearing masks can be traced back to the history of masks. According to Western historical records, as early as the 6th century BC, Persians required believers to cover their faces with a cloth during religious rituals, which prevented people's breath from reaching the Gods.^[3] This is the most primitive mask that had been documented. However, it was not until 1895 that German pathologist Ledsch proposed that the droplets exhaled by medical personnel during communications could carry germs and lead to wound infections in patients. Therefore, he

suggested that medical staff should wear a gauze mask to cover their mouth and nose during surgeries.^[4] The utilization of masks significantly reduced wound infections among patients and was therefore implemented by the majority of medical staff. Subsequently, in 1897, a built-in thin wire for support was added to the mask to introduce a gap between the gauze and the nose and mouth, thereby overcoming the issue of poor airflow of masks. This was recorded by German scientist Mikulicz J as "surgeries performed by personnel wearing gloves and masks."^[5]

In Eastern historical records, the history of masks can be traced back to as early as over 2000 years ago, when "Rites of Zhou" wrote "Cover mouth so that the breath will not contact other people." "Mencius-Li Lou" also recorded that "If she was contaminated with something foul and smelly, people would cover their noses and walk over, even if she was as beautiful as Xi Shi." In addition, "Travels of Marco Polo,^[6]" written in the early 13th century, documented that "The numerous persons who attend at the sideboard of his majesty, and who serve him with victuals and drink, are all obliged to cover their noses and mouths with handsome veils or cloths of worked silk, in order that his victuals or his wine may not be affected by their breath." Masks were subsequently developed with the outbreak of infectious diseases. At the end of 1910, there was a plague outbreak in Harbin, China. During the outbreak, public health expert Dr. Lian-De Wu discovered that the epidemic was caused by *Yersinia pestis* and, therefore, proposed that it could be transmitted through droplets. On this basis, he invented the "Wu's mask,"

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which successfully prevented the spread of the pneumonic plague.^[7]

A randomized controlled trial (RCT) of masks among the general public during an influenza epidemic in Australia in 2009^[8] showed that mask use can significantly reduce the risk of influenza-like illness associated infection. Another cluster RCT across Hong Kong, China was designed to investigate whether hand hygiene and use of masks prevent household transmission of influenza, results showed that in 154 households in which interventions were implemented within 36 h of symptom onset in the index patient, transmission of reverse transcription polymerase chain reaction-confirmed infection seemed reduced, an effect attributable to fewer infections among participants using masks plus hand hygiene (adjusted odds ratio, 0.33 [95% confidence interval, 0.13–0.87]).^[9] For new or emerging respiratory virus infections, non-pharmaceutical interventions may be available. Although the evidence is not sufficiently strong to support the widespread use of face masks as a protective measure against COVID-19, personal protective equipment could prevent some transmission of COVID-19 and save lives. Unlike in Australia and USA, mask-wearing has become normalized in some Asian countries, partly as a protection against polluted air and also as a experimental response to the severe acute respiratory syndrome coronavirus and Middle East respiratory syndrome coronavirus outbreaks. It's worth noting that absence of evidence is not evidence of absence, we should act without definitive evidence, wearing masks in public should be advised, just in case.

Considering the importance of wearing masks, the advice of the US Centres for Disease Control and Prevention was updated on April 4, 2020, originally advised the public against wearing masks during the COVID-19 pandemic.^[10] Including the following: You could spread COVID-19 to others even if you do not feel sick; Everyone should wear a cloth face cover when they have to go out in public, for example, to the grocery store or to pick up other necessities; The cloth face cover is meant to protect other people in case you are infected; Do not use a face mask meant for a health-care worker; Continue to keep about 6 feet (2 m) between yourself and others; The cloth face cover is not a substitute for social distancing.

Since the advent of masks, there is no doubt that the mask has been protecting humans in the face of the epidemic. For a long time, Eastern and Western attitudes towards wearing masks can be summarized as follows: the Eastern society believes that “masks can protect us” and to wear them “actively,” whereas the Western society believes that

“masks can only prevent patients from transmitting diseases” and to wear them “passively.” Due to different cultural origins and histories, there are substantial variations in values and attitudes toward “wearing masks” between the two societies. However, it is worth mentioning that in the context of the COVID-19 pandemic, the virus is restricted by neither the geographical location nor a certain population, whereas masks can always protect us regardless of our attitude. Although we cannot determine whether it is correct or not to wear a mask during the COVID-19 pandemic, maybe we will be able to understand what benefits masks have brought us after the end of the outbreak.

Conflicts of interest

None.

References

1. Coronavirus Disease (COVID-19) Advice for the Public (Last updated 4 June 2020). Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public/>. [Accessed July 6, 2020]
2. Chinese Center for Disease Control and Prevention. Public Science Guide to Wearing Masks. Available from: http://www.chinacdc.cn/jkzt/crb/zl/szkb_11803/jszl_2275/202003/t20200319_214559.html. [Accessed July 6, 2020]
3. Spooner JL. History of surgical face masks. *AORN J* 1967;5:76–80. doi: 10.1016/s0001-2092(08)71359-0.
4. Alwitry A, Jackson E, Chen H, Holden R. The use of surgical face masks during cataract surgery: is it necessary? *Br J Ophthalmol* 2002;86:975–977. doi: 10.1136/bjo.86.9.975.
5. Mikulicz J. Das Operieren in sterilierten Zwirnhandschuhen und mit Mundbinde. *Centralblatt für Chirurgie* 1897;26:714.
6. Polo M, Wright T, Marsden W. The Travels of Marco Polo, the Venetian (English Edition). London: Henry G. Bohn Press; 1854. 153.
7. Wu LT. Plague Fighter. The Autobiography of a Modern Chinese Physician. Cambridge: W. Heffer and Sons Ltd; 1959.
8. MacIntyre CR, Cauchemez S, Dwyer DE, Seale H, Cheung P, Browne G, *et al*. Face mask use and control of respiratory virus transmission in households. *Emerg Infect Dis* 2009;15:233–241. doi: 10.3201/eid1502.081167.
9. Cowling BJ, Chan KH, Fang VJ, Cheng CK, Fung RO, Wai W, *et al*. Facemasks and hand hygiene to prevent influenza transmission in households: a cluster randomized trial. *Ann Intern Med* 2009;151:437–446. doi: 10.7326/0003-4819-151-7-200910060-00142.
10. Centers for Disease Control. How to Protect Yourself. Available from: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fprepare%2Fprevention.html. [Accessed July 6, 2020]

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