

Letter to Editor

Face Mask: The New Norm That Becomes The New Anatomy

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Dear Editor,

The novel Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) infection which has swept across the world, sacrificing nearly hundreds and thousands of lives, has forced us to come to terms with the new 'norms' of physical distancing, frequent hand washing in addition to wearing a face mask in combating this deadly pandemic. Although the number of cases was noted to be on the rise¹, we are currently in the midst of a transition to an endemic phase. Whilst wearing a face mask is no longer compulsory in most parts of the world, it remains a necessity to be used in health care facilities as SARS-CoV-2 infection still remains. Now the question that remains is, why must we still adopt wearing a face mask?

Transmission of Virus

Plausible trajectory of SARS-CoV-2 transmission includes direct and contact; the former includes transmission via droplets from cough and sneeze and the latter through contact with various body surfaces notably oral, nasal, and eye. Droplet size threshold has been reported to be between 5 to 10 µm Interestingly, recent non peer-reviewed study found that talking at a louder volume generates larger quantity and size of droplet causing a higher viral load of SARS-CoV-2². In addition to that, viral titre is discovered to be high in the saliva of SARS-CoV-2 positive patients regardless of being asymptomatic or not³. Accruing to that, recent evidence has shown that virus can be present in exhaled air from talking and breathing. This finding was echoed by a recent study whereby SARS-COV-2 was detected for 3 hours⁴.

Preventive Measures

Face mask usage has been made compulsory in nearly all countries when going outdoor which made it to be sold like hotcakes overnight. Face mask which was previously used only by healthcare workers in healthcare facilities are now being used by the entire humankind even upon visiting place of worship. Effectiveness of wearing mask in preventing SARS-CoV-2 remains debatable to date. Additionally, notions such as face mask espouses false sense of security flags concern.

Yet, earlier study has reported on equal effectiveness of both surgical mask and N95 mask in preventing spread of influenza virus⁵. Among the health care workers (HCW), especially those dealing with Aerosolised Generating Procedure (AGP), the personal protective equipment (PPE) comprises of gown, goggles, face shield, gloves besides face mask. The face mask is worn throughout the day until the HCW leaves the contaminated area. It is prudent that mask is taken off properly and discarded in a designated area which is then followed by hand hygiene. Appropriate PPE guidance for HCW has been defined by World Health Organisation (WHO).

Types of Mask

Several types of masks are available differing in its filtering capability including: cotton face mask, surgical mask and High-efficiency particulate air (HEPA) mask. Home-made cotton face mask avoids one from touching the nose and mouth unintentionally reducing chance of transmission of SARS-CoV-2 albeit meagrely. Cotton mask has been shown to

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significantly reduce droplets along with transmission of respiratory particles upon talking, coughing albeit its efficiency remains one-third of surgical mask⁶. It enables to be reused after cleaning hence is cost-effective.

The US Food and Drug Administrative (FDA) approved pleated three-layered surgical mask remains the most favoured mask by the public. It protects in general from droplets produced by users during talking and coughing although leakage of droplets is viable ensuing the loose-fitting nature of the mask. Its additional advantage is its ability as fluid barrier. HEPA mask is able to efficiently collect fine dust particles as it fits face sealing the boundary with its filter efficiency ranging from 80 to 95% despite being known for being extremely uncomfortable especially after continuous usage. HEPA masks such as KF94, N95 and KF80 are readily available in the market are being targeted by public in hopes of being immunised from the deadly SARS-CoV-2. The overenthusiastic public maybe unaware that HEPA masks are not to be used for longer than 4 hours and not all HEPA masks are fluid resistant. Additionally, droplets contained within the HEPA masks will wither the filter faster⁷ besides the possibility of patients to asphyxiate in their own secretion.

Public is unaware of the current issue faced accruing overzealous mass-purchasing of surgical and HEPA masks which has led to sudden shortage across the nation for the most needed; the HCW. Against the backdrop of the current shortage of masks, the Centre of Disease Control and prevention (CDC) recently announced its support on usage of cloth face coverings by public especially in regions with high community-based transmission⁸. Cloth face mask can be readily fabricated with no hassle at low cost is declared adequate for the public to curb transmission of SARC-CoV-2 infection.

Accruing to that, public should be aware of the correct technique to wear a mask. Firstly, it is important to clean hands with soap or hand sanitiser prior to touching the face mask. Next, remove the mask from the box and it is necessary to check that the mask has no tears or holes on both sides. Decide the top side of the mask: the side of mask with a stiff bendable edge is the top as it is meant to mold with shape of the nose. The coloured side of the mask is the outer side which should face away whilst the white side touches the face. Depending on the type of mask, wear the

mask properly. Mask with ear loops are held by the ear loops and loop are placed around each ear while the mask with ties are first brought to the nose level followed by tying over the head crown and securing with a bow.

Protection from air pollutants

Benefit of face mask is beyond the pandemic. Whilst hustling through surviving the pandemic, we have forgotten the most significant dilemma scourging our lives globally: air pollution. In 2015, 6.5 million deaths were reported as a result of atmospheric air pollution⁹. In terms of air quality, Bangladesh has been found to be the most polluted countries in the world with Dhaka ranked as one of the two most polluted cities. Interestingly, a face mask can protect against inhaled particulate resulting from air pollution, albeit the usage of face masks beyond the pandemic remains elusive.

Acute exposure to airborne particulate matter following a dangerous level of air pollution can result in serious respiratory diseases¹⁰. For example, fine particulate matter (particles with aerodynamic diameters smaller than 2.5 μm) has been associated with the risk of asthma, chronic obstructive pulmonary disease as well as numerous other respiratory infections¹¹.

Parallel to that, the level of protection from using face masks relies on the protection factor (PF), which is the ratio of particles upstream and downstream of the device. The efficiency of mask filtration depends on several factors, including the mask's material, such as type of fabric, fabric diameter, fabric structure, layers of the mask and the velocity of airflow through the mask¹². Small diameter particles between 0.01 to 0.1 μm can be collected by the mask through diffusive mechanism whereas inertial mechanism collects larger particles (0.7 to 10 μm)¹³. The N95 respirators has been advocated to reduce the inhalation of dangerous air particulate⁹.

Removal and Disposal

Similarly, removal of face mask requires proper handling as improper disposal leads to virus transmission. First, hands are cleaned with either water and soap or hand sanitizer prior to touching the mask. It is imperative to be aware that the front of the mask should never be touched at all times as its contaminated. The face mask with ear loops are held on both ear loops are lifted and removed. As for

face mask with ties, the bottom row of ties is untied first followed by the top bow and the mask is pulled away as the ties are loosened. The mask is placed in a separate plastic bag and discarded in the trash. This is should be followed by cleaning the hands with either soap and water or hand sanitiser.

We would therefore urge the public to exercise timely recommended precaution as the looming evidence advocates on usage of masks when going outdoor does not shield or cure a person from contracting SARS-CoV-2 infection, but instead prevents disease

transmission. WE now need to re-think and re-evaluate the the usage of face mask in our daily lives, as its role is beyond the pandemic.

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