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Editorial

Face-Masks in Curbing Spread of COVID-19 Virus: An Evidence Based Approach or a Utopian Dream!

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COVID-19 has kept the entire world toggling between a distant hope and dread for the last couple of years. New variants are on the rise and dreadful alarms are found in the news media. Vaccinations probably would outturn the virus.

This however is only plausable if a herd immunity is obtained across the planet. Short of that we would have to live with this deadly virus for years to come, and the mere slogan to observe face masks and personal protection measures in curbing the virus would appear to be a fond hope and a utopian dream.

Face masks were initially introduced on the valid assumption of an inevitable transmission of COVID-19 infection.

As such face masks became the order of the day, and willy-nilly people were obliged to wear them for their own personal protection and also in preventing others from getting infected in case they were the carriers of this deadly virus [1-2].

In order to confront the COVID-19, the US Centers for Disease Control and Prevention (CDC) recommended all healthy people to wear a cloth face cover in public [3].

Later a study came up with an alarming finding that there was an elevated concentration of CO2 in range that is in excess of National Institute for Occupational Safety and Health (NOSH) limits under KN95 respirator and valved respirators. However, it was demonstrated that carbon dioxide increases with face masks but remains below short-term NIOSH limits [3].

Despite the fact that face-masks have been recommended since they reduce SARS-COV-2 transmission, however concerns unraveled regarding the safety of face-masks [3-4] and alarms raised about hypercapnoea and hypoxemia caused by face-masks [4-5].

Over the passage of time, some people would use them of and on as the face-masks made them to overbreathe and eventually made them tired and breathless. Carbon dioxide rebreathing can usher in side-effects such as dyspnea, dizziness, headaches and impaired cognition while using tight fitting N95 masks and valved respirators [4-6].

Having contemplated over this issue, we have deducted that the face-masks result in an astronomical rise in PaCO2 and finally ends up in fatigue, lethargy and headache. As PaCO2 surpasses the normal values of 35-45mm Hg, adverse effects crop in the body in the form of cerebral vasodilation leading to increased cerebral blood flow culminating in headache because of hyperemia. As advocated by the CDC, use of face masks is mandatory

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and all should adhere to it as a simple means of prevention. However, it should be realized that if you use a tight face-mask, PaCO2 is bound to build up in the body as the exhaled air is being inhaled again and again with no outlet for its exodus whatsoever. Such tight face-masks are bound to cause suffocation according to the lay man's perception. Thus to overcome suffocation or an urge to breathe normal air, people customarily use face-masks of and on.

To further add to the existing dilemma, a new viral disease has recently surged in again in China known as pneumonia of unknown orgin or human metapneumovirus (HMPH) which has raised global concerns. Could it be another COVID-19 like virus that ravaged the entire world?

Shortly after wearing face masks, the inhaled air CO_2 approached the highest acceptable exposure threshold recommended for patients, while concerningly high concentrations were recorded in minors, and in virtually all individuals when wearing FFP_2 masks. The CO_2 concentration was significantly higher among minors and the subjects with higher respiratory rate. If these findings are confirmed, the current guidelines on face mask should be re-evaluated.

In conclusion, are face-masks fully effective in curbing COVID-19 transmission or are we at liberty to use them of and on, or else call it a day and not use the face-masks altogether? Or else the present guide lines regarding face-mask use need to be re-visited and re-evaluated!

References

[1] Esposito S, Principi N, Leung CC, Migliori GB. Universal use of face masks for success against COVID-19: evidence and implications for prevention policies. Eur Respir J. 2020 Jun 18;55(6):2001260.

[2] Centers for Disease Control and Prevention Coronavirus Disease (COVID-19) How to protect yourself and others. https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.htonl.Date last accessed. Dec 29, 2024.

[3] Rhee MSM, Lindquist CD, Silvestrini MT, Chan AC, Ong JJY, Sharma VK. Carbon dioxide increases with face masks but remains below short-term NIOSH limits. BMC Infect Dis. 2021; 21(1):354.

[4] Liang M, Gao L, Cheng C, Zhou Q, Uy JP, Heiner K, Sun C. Efficacy of face mask in preventing respiratory virus transmission: A systematic review and meta-analysis. Travel Med Infect Dis. 2020; 36:101751.

[5] Chan NC, Li K, Hirsh J. Peripheral Oxygen Saturation in Older Persons Wearing Nonmedical Face Masks in Community Settings. JAMA. 2020; 324(22):2323-2324.

[6] Lim EC, Seet RC, Lee KH, Wilder-Smith EP, Chuah BY, Ong BK. Headaches and the N95 face-mask amongst healthcare providers. Acta Neurol Scand. 2006;113(3):199-202.