REVIEW ARTICLE

RISKS ASSOCIATED WITH THE USE OF FACE MASKS DURING THE COVID-19 CRISIS

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ABSTRACT

After the emergence of COVID 19, face masks have become a clothing accessory that is worn every day and everywhere. Even though face masks offer excellent protection against microbial invasion, they are not free from the inherent or acquired ill effects. Being regular users of face mask, individuals should be aware about the associated risks and detrimental effects too. This review gives an insight on the risks associated with the use of face masks during the COVID-19 crisis.

Keywords: face mask, risk, COVID 19, pandemic.

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INTRODUCTION

Face masks, within the last year or so, have come to be a topic of discussion in public dialogue and political debate, which is greater than ever earlier than. Using face masks at the community level for sickness prevention can be traced lower back to the time of the Manchurian plague (1910-1911). At some point in this epidemic, the crew operating on the containment of this sickness, suspected airborne transmission of this pneumonic plague and recommended human beings wear gauze masks in addition to quarantining the patients. Nearly a century later, with discoveries and advancements in knowledge of infectious sicknesses, face masks have become the first line of protection in opposition to severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and now the COVID-19 outbreak because of the unconventional coronavirus SARS-CoV-2. The knowledge that using face masks delays SARS-CoV-2 transmission is rapidly gaining recognition amongst the general population. This solid the exponential use of masks of diverse kinds, now not just via health workers but also by using generational population as Personal Protective Equipment (PPE).[1]

The surgical face masks have ended up being an image of our times. Face masks have become a clothing accessory that is worn every day and everywhere. A variety of shapes, forms, and materials are getting used and advertised to the factor that during 2020 the commercial enterprise of manufacturing and selling face masks became born.[2]

Carrying protective masks, goggles, and gloves, thorough hand washing, in addition to the common use of topical antiseptics became compulsory for a large spectrum of the population and healthcare workers. Very quickly this ended in occupational skin damage amongst clinical professionals consisting of facial skin injury on the back of the nose, forehead, and suprazygomatic area.[3] This review gives an insight on the risks associated with the use of face masks during the COVID-19 crisis.

Types of masks

There are 3 forms of face mask available within the market: (i) COVID-19 - material mask, (ii) clinical mask, and (iii) respirator mask (N95 and N99).

Risks associated with the usage of face masks

Wearing masks has its blessings and undeniable shielding effects against infections. However, there are also potential risks and side effects that crop up during the usage of masks for a prolonged time. This specifically applies to the use in the general population.[4]

Sporting masks for an extended amount of time causes a host of physiologic and psychologic burdens and might lower work efficiency. Interest can't be achieved as long or as correctly whilst carrying a mask compared to while masks aren't worn. Additionally, the time frame that an activity can be sustained is decreased when wearing masks and PPE. Prolonged use of N95 and surgical masks causes physical adverse effects such as headaches, difficulty breathing, acne, skin breakdown, rashes, and impaired cognition. It also interferes with vision, communication, and thermal equilibrium.[5,6]

Complications like headaches related to extended mask use can be attributed to mechanical factors, hypercapnia, and hypoxemia. Tight straps and pressure on superficial facial and cervical nerves are mechanical features causing headaches. Cervical neck stress from donning PPE, sleep deprivation, abnormal mealtimes, and emotional pressure are other resources of complications amongst healthcare experts at some stage in extended mask use. Tight-fitting masks cause inadequate ventilation and increased levels of carbon dioxide (CO2) known as hypercapnia. As CO2 is an acknowledged respiratory stimulant, the build-up of exhaled CO2 between the mask and face will cause increased lung ventilation and respiratory activity. Signs and symptoms of hypoxemia which includes chest pain and tachypnoea also are cited by healthcare professionals with prolonged mask use. Exhaled CO2 builds up between the mask and face, and increased levels of CO2 cause confusion, impaired cognition, and disorientation.[5,6]

A hot and humid environment is found within the facial region covered by masks, which reasons for pain, and hyperthermia. This can create a scenario where the healthcare professional is unable to understand risks and perform manual tasks, and it considerably affects motor competencies. The moist/wet surroundings and pressure from tight-fitting masks additionally block facial ducts. This

may explain the growth of acne with prolonged mask use.[5,6]

Frequent PPE and mask changes may cause shearing and breakdown of the skin, and breakdown on the bridge of the nose and cheekbones can be attributed to tight-fitting masks and goggles that put stress on those precise areas.[7]

Formaldehyde is a chemical utilized in PPE that some are sensitive to and/or allergic to. Frequent frictions due to the straps, trapping of sweat, use of disinfectant to reuse mask, and usage of dyes for coloration of the homemade mask are common reasons for dermatitis using ear loop face mask. The strap fabric which includes a thermoelastic polymer, rubber, and latex further leads to contact dermatitis. Furthermore, the mask can cause exacerbation of pre-existing dermatoses. Others may react to thiuram which is found in the ear loops of surgical masks.[8]

Literature review

Chia et al. used a questionnaire to analyze the perception of doctors, nurses, and other personnel on the role of PPE (personal protective equipment) during the SARS outbreak in Singapore for 2 months in 2003. It was reported that even qualified staff did not have sufficient knowledge of the protective properties of face masks during a pandemic. This study highlighted the importance of adequate communication, education, and the exchange of information in a timely fashion.[9]

Kim et al. studied the role of N95 masks on lung function and heart rate during low-to-moderate exercise/physical workload. In their study, they reported that only healthy subjects seem to tolerate wearing such a mask.[10] The most frequently reported adverse skin responses (68.9%) among healthcare workers who used N95 masks were nasal bridge scarring and face itching (27.9%) reported by Kaihui et al.[11]

Chowdhury et al reported that 48.76% of the respondents had unfavorable skin responses beneath the face masks; female gender, physicians, professionals working more than 32 hours a week, wearing N95, and more than one mask were predictors of skin problems. 28.47% and 60.15% of all participants suffered from some form of oral and neurological problems, respectively. A humid environment causes increased sweating and dehydration, which eventually reduces saliva water and can finally cause dry mouth and halitosis. Oral problems are nearly four times more common among N95 mask users. N95 may form a tight barrier that prevents normal nasal breathing, forcing a person to breathe through their mouth. Mouth breathing may disturb oral flora, resulting in oral problems, increased caries risk, and halitosis.[12]

Foo et al. reported that 35.5% of the medical staff who used N95 masks regularly, complained of facial dermatitis, acne, and the pigmentation of cheeks, chin, and nasal bridge. It was also reported that dermatitis with pruritic lesions mainly caused irritation, but allergic contact dermatitis occurred because of the adhesives or other parts of the respiratory mask, like rubber straps and metal clips.[13] A profound number of healthcare professionals who participated in a survey conducted by Rosner E reported adverse reactions to prolonged mask use during COVID-19.[5] A study by Lim et al. focused on headaches related to N95 face mask use in health care workers.[14]

Recommendations to avoid risks associated with face masks use

High-quality FFP2/3 masks are more reliable protection from infections. They should always be available for medical staff and people at risk. When used by the general population, specific groups at risk for complications related to mask use should be educated on what to expect. For example, patients with severe COPD can experience a deterioration of their respiratory parameters. Therefore, patients must be individually educated by their general practitioner about the risk of wearing masks. Finally, the user must be educated on the different types of masks available, how and when to wear them, and, above all, how to handle them correctly, similar to the safety instructions given before take-off in an aircraft.[2]

It would be better if healthcare professionals use headband with buttons to allow ear straps to rest on these items instead of behind the ears, if they are working for long hours. Fresh mask for each shift is also a better option to avoid skin breakdown. The general population, using homemade face masks should use cotton cloth-based masks with gaiters of appropriate elasticity and avoid any disinfectant application. Persons with pre-existing dermatoses including atopic dermatitis, seborrheic dermatitis, and chronic urticaria need to take special precau-

tions and the use of disposable surgical masks should be encouraged.

Conclusion

Measures to prevent infections are important for the contemporary pandemic. Face masks have been considered a first step to save you and comprise the spread of the ailment. Frequent breaks, improved hydration and rest, skin care, and probably newly designed comfortable masks are hints for future management of detrimental effects associated with prolonged mask use. More studies of the filtering efficiency of various varieties of masks are also wanted.

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