

Unmasking the Consequences Faced by Prolonged usage of Masks in Dental Professionals

Ghogrey Rutuja¹, Shah Mona U.², Doshi Yogesh³

ABSTRACT

Introduction: During the COVID19 pandemic, the usage of face masks was mandatory for dental professionals to prevent infections. Prolonged usage of masks is accompanied with several consequences.

Material and methods: A questionnaire was developed with 15 close ended questions based on the consequences faced by dental professionals, by prolonged usage of face masks. A total of 114 participants responded to the survey and data was statistically analysed.

Results: Out of total participants 91.2% participants experienced sweating and 60.5% participants experienced breathlessness, with the use of masks. 66.7% participants experienced xerostomia due to prolonged usage of masks. Other difficulties like nasal discomfort was experienced by 36.8% of participants, 64.5% experienced pain behind the ear, 17.5% experienced headache, 16.7% experienced heaviness, 39.5% experienced acne/pimples, 64% participants agreed to the fact that the use of double masks has aggravated the above mentioned consequences.

Conclusion: This survey identified various adverse effects of prolonged usage of face masks experienced by dental professionals during the COVID 19 pandemic. Along with sweating and breathlessness, xerostomia is also one of the potential long term consequences which should not be overlooked as it may compromise periodontal health in the long run.

Keywords: COVID 19, Face Masks, Breathlessness, Xerostomia, Nasal Discomfort, Pandemic, Survey.

INTRODUCTION

During the COVID-19 pandemic, face masks, including N95, surgical, and cloth masks, have been employed as public and personal health control measures against the spread of SARS-CoV-2, the virus that causes COVID-19¹.

Facemasks are of vital importance in protecting the healthcare workers from the Corona virus disease (SARS-COV 2). The World health organisation (WHO) announced the pandemic of COVID-19 on 11th March 2020².

In community and healthcare settings, their use is intended as source control to limit transmission of the virus and also for personal protection to prevent infection³. The healthcare professionals are more prone to the infection spread from COVID-19. Properly worn masks both limit the respiratory droplets and aerosols spread by infected individuals and help protect healthy individuals from infection^{4,5}. Masking has proven effective in reducing the transmission of COVID-19 and other airborne illnesses through many studies^{4,6,7}.

Masks vary in how well they work, with N95 and surgical

masks outperforming cloth masks, which are more common due to supply shortages⁸, but even cloth masks, with their variability in fabric type and mask fit, provide wearers with substantial protection from particles carrying COVID-19⁹.

Governments have widely recommended and mandated mask-wearing. Prominent national and intergovernmental health agencies and their leaders have recommended the use of masks to reduce transmission, including the WHO, American, European and Chinese Centres for Disease Control and Prevention¹⁰. Prolonged usage of masks is accompanied with several consequences like sweating, breathlessness, xerostomia, nasal discomfort, pain behind the ear, headache, heaviness, acne/pimples.

This survey identified various adverse effects of prolonged usage of face masks experienced by dental professionals during the COVID 19 pandemic.

MATERIAL AND METHODS

This questionnaire based survey was conducted among the dental professionals. Written permission was obtained from the ethical committee of the institution prior to carrying out the survey.

Study design and setting

A questionnaire was developed with 15 close ended questions based on the consequences faced by dental professionals, by prolonged usage of face masks.

Study participants and sampling

A total of 114 participants responded to the survey and data was statistically analyzed.

Inclusion criteria was practicing dental professionals, postgraduate students and undergraduate students. Exclusion criteria included non-healthcare workers.

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RESULT

A total of 114 dentists participated in the study. Questions in the study were mainly directed towards the consequences of prolonged usage of face masks like, sweating around the mouth, breathlessness, xerostomia, halitosis/bad breath, nasal discomfort, pain behind the ear, headache, heaviness, acne/pimples.

Out of the total 114 participants 37.7% were using N95 masks, 13.2% were using surgical masks, 6.1% were using cloth mask and 43% were using the combination of the above masks.

All the participants were aware of the reason why it is essential to use a mask. 80.7% dental professionals were using

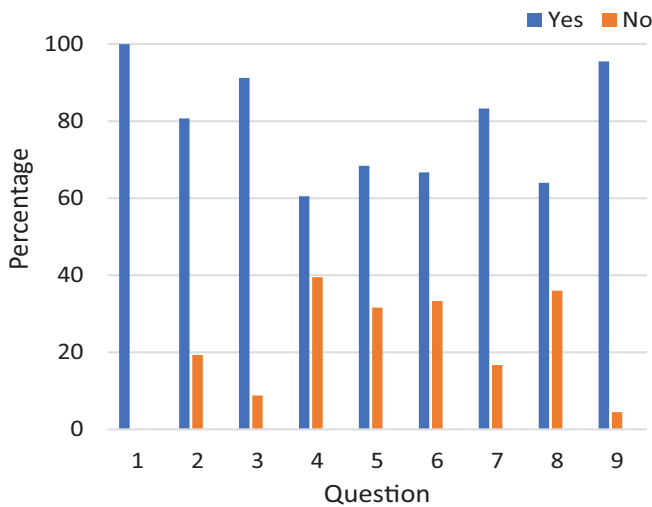
double masks. Out of which 53.5% participants were using the combination of N95+surgical mask, 16.7% were using surgical+surgical masks, 26.3% were using surgical+cloth masks, 3.5% participants were using cloth+cloth masks.

18.4% participants were using the mask for 1-2 hrs., 41.2% for 3-4 hrs., 40.4% for more than 5hrs.

91.2% participants experienced sweating around the mouth with the use of masks. 60.5% dental professionals, experienced breathlessness. Out of which 41.2% experienced breathlessness with N95 masks, 7% with surgical masks, 14.9% with cloth masks, 36% with the combination of these masks.

66.7% participants experienced xerostomia due to prolonged usage of masks. 31.6% participants experienced halitosis/bad breath while using the masks and 83.3% participants agreed to the fact that xerostomia could be the reason of halitosis/bad breath.

Other difficulties like nasal discomfort was experienced by 36.8% of participants, 64.5% experienced pain behind the ear, 17.5% experienced headache, 16.7% experienced heaviness, 39.5% experienced acne/pimples, 64% participants agreed to the fact that the use of double masks, aggravated the above mentioned consequences.

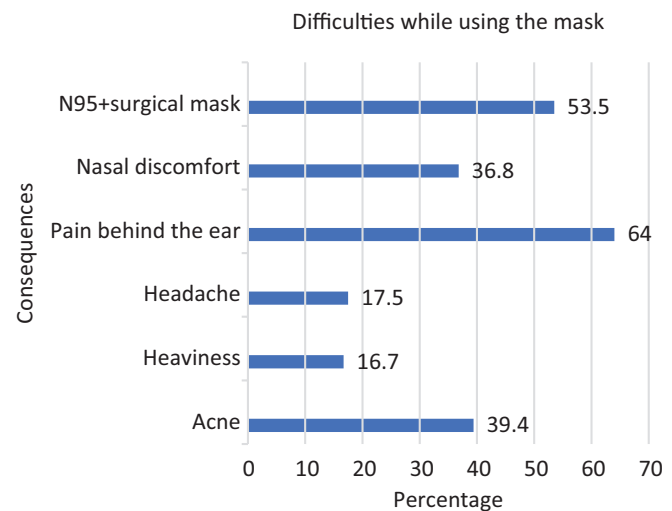


Questions for graph 1

1. Are you aware of the reason why it is essential to use mask?
2. Do you use double mask?
3. Do you experience sweating around the mouth while using mask?
4. Do you experience difficulty in breathing while using mask?
5. Do you experience halitosis or bad breath while using mask?
6. Do you experience xerostomia/dry mouth while using mask?
7. Do you think that xerostomia could be a reason for halitosis?
8. Do you think that above consequences are aggravated by use of masks?
9. Will you continue using masks post vaccination?

Graph-1:

DISCUSSION



Graph-2:

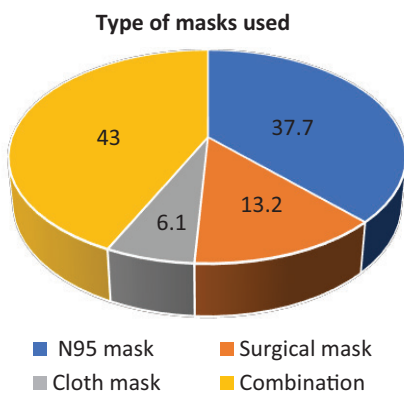


Diagram 1

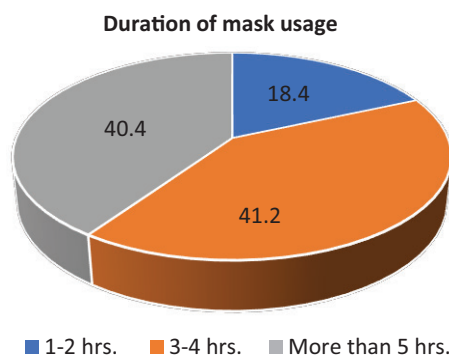


Diagram 2

Graph-3:

The COVID-19 pandemic mandates respiratory protection by using the face masks as a part of personal protective equipment to limit exposure¹ in dental professionals. However, such a type of protection is not free from certain consequences.

Although putting on a mask is a vital part of the personal protective kit for protecting the dental professionals against the increased risks of COVID-19 infection, the associated adverse events cannot be excluded. A profound number of dental professionals who participated in this survey reported adverse reactions to prolonged mask usage.

As face mask protects us against the harmful micro-organisms its utilization is essential during the pandemic. Facemasks prevents transpiration (expiration), increases perspiration (speeds up the breathing) and temperature in perioral region, which could possibly be due to decreased transpiration¹¹. Difference in conduction of CO₂ and O₂ causes relative increase in warmth and dampness of the expired air causing condensation of moisture on the face mask¹². Wearing the facemask for a prolonged period causes reduced heat loss from the body by various mechanisms such as conduction, convection, evaporation and radiation¹³.

Since face masks cover both nose and mouth it result in decrease in cooling impact of facial temperature which may result in sweating around the mouth¹⁴, nasal discomfort, breathlessness and acne/ pimples.

Dehydration caused due to wearing a mask can lead to dry mouth, increased risk of tooth decay and bad breath. Dry mouth makes it more difficult to eat, swallow, speak and also increases chances of developing tooth decay and other oral infections.

In this regard, a dental professional should be ensured to take scheduled frequent breaks during long shifts. They can also prevent these consequences by focusing on their oral care routine (proper toothbrushing followed by using dental floss and mouthwash), staying hydrated (limiting the consumption of coffee and alcohol), performing breathing exercises¹⁵, applying moisturizers, emollients, and barrier creams to prevent skin breakdown.

To prevent headache¹⁶, heaviness, nasal discomfort one should take frequent short breaks, neck massage, increase hydration especially before the start of the shift, alternating between surgical and N95 masks (if possible), wearing an N95 mask with a filter to allow for better ventilation and wearing a mask that fits one's face best. Using ear straps, paper clips or a headband with buttons to allow ear straps to rest on these items instead of behind the ear. Using a clean and fresh mask and regularly replacing it also helps in preventing infection.

According to Centre for Disease Control (CDC) the use of well fitted masks to the contour of the face has shown better efficacy in preventing infection spread due to COVID-19.

Limitations

However, this survey captured the experiences of many dental professionals, the study is not without limitations. The work environment without adequate ventilation and

air conditioning may augment the feeling of discomfort. Performing a study in a more controlled environment with appropriate temperature and humidity controls should be considered. In all circumstances, dental professionals should be advised to take breaks and to be in a supportive environment to report adverse impacts like dizziness and other symptoms which may compromise patient safety. Other issues such as stress level and quality sleep were not included in this survey, and these important factors could also attribute to adverse effects in the survey respondents.

CONCLUSION

The use of face masks plays pivotal role in causing significant discomfort in all the participants during its prolonged usage, which can limit the efficient usage of face masks leading to increased chances of infection spread due to COVID-19. Certain strategies can be followed to reduce the chances of infection and its consequences.

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