



Research Article

Perceptions and usage of masks among dental professionals – The impact of COVID

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Received: 13 January 2022
Accepted: 09 June 2022
EPub Ahead of Print: 20 August 2022
Published: 06 January 2023

DOI
10.25259/JGOH_9_2021

Quick Response Code:



ABSTRACT

Objectives: As per the World Health Organization, the usage of mouth masks, hand washing, and social distancing as a part of a comprehensive package were the primary non-pharmacological methods that were effectively used as early prevention and control strategies against COVID-19. The habitual use of medical masks/mouth masks by dentists plays a significant role in reducing the occupational inhalation of aerosols, saliva, microorganisms, blood, tooth particles, restorative materials, etc., from the patient's mouth/airway. The study was conducted to assess the influence of the pandemic on perceptions and usage of masks among dentists.

Materials and Methods: The study was a cross-sectional questionnaire-based survey conducted online. The target population was dental practitioners, dental house surgeons, postgraduate students, and teaching faculty in Ernakulam district of Kerala, India. The questionnaire was divided into two parts. The first part consisted of questions on professional data – designation, type of practice, and experience. The second part consisted of 18 questions to assess the perception and usage of masks.

Results: The final sample size was 207. About 40% of the respondents ($n = 81$) were faculty/practitioners. The rest were house surgeons/postgraduate students. Over 60% of the respondents had treated patients during the pandemic. About 57% reported having done aerosol-generating procedures (AGPs). Over 93% of them reported that the pandemic has changed the preference for masks for non-AGP. Over 91% followed the recommended guideline for mask disposal. Over 96% of the study participants agreed that the pandemic has increased their awareness regarding the use of masks. About 76% felt that dentists were better protected against COVID infection due to the habitual wearing of masks as a part of their profession. About 86% felt that the change in mask practices will continue after the pandemic.

Conclusion: The perceptions and knowledge regarding the usage, selection, and disposal of masks among the population studied have improved following the COVID-19 pandemic. Considering dental professionals as a cohort involved in regular usage of masks for decades, better knowledge and practice related to the use of masks is warranted.

Keywords: Masks, COVID-19, Infection control, Knowledge, Practice

INTRODUCTION

As health-care professionals, dental professionals are on the frontline and have a high risk of contracting infectious diseases, which are transmitted by direct or indirect contact through instruments or body fluids, such as blood and saliva.^[1] Working close to the oral cavity, dentists are at risk of airborne infections. The pandemic of the SARS-CoV-2 virus, causing COVID-19 disease, is transmitted mainly by close contact with secretions or excretions (droplets) of

infected patients in the absence of the necessary protective barriers.^[1]

As per the World Health Organization, the usage of mouth masks, hand washing, and social distancing as a part of a comprehensive package were the primary non-pharmacological methods that were effectively used as early prevention and control strategies.^[2,3]

Medical masks are a type of personal protective equipment used to prevent the spread of respiratory infections. These masks cover the mouth and nose of the wearer and, if worn properly, may be effective at helping prevent the transmission of respiratory pathogens.^[2]

The habitual use of medical masks/mouth masks plays a significant role in reducing the occupational inhalation of aerosols, saliva, microorganisms, blood, tooth particles, restorative materials, etc., from the patient's mouth/airway. Dentistry is a profession associated with the use of high-speed air-driven handpieces and ultrasonic scalers, producing a large amount of aerosol and splatter, including visible and invisible particles. Furthermore, the particles are concentrated mainly within 2 m of the patient, where they easily can be inhaled by dental operators. Hence, dentists, unlike other health-care professionals, have been constantly using mouth masks during all dental procedures for decades.^[4]

Studies conducted across the globe after the onset of the COVID-19 pandemic have highlighted the increasing awareness regarding the use of face/mouth masks among the general population as well as health-care professionals.^[1,4-7] This study was conducted with the objective of assessing the perceptions and usage of masks among dental professionals following the COVID-19 pandemic.

MATERIALS AND METHODS

The study was a cross-sectional questionnaire-based survey conducted online. The target population was dental practitioners, dental house surgeons, postgraduate students, and teaching faculty in Ernakulam district of Kerala, India. A prefabricated validity-tested questionnaire was devised for use based on the previous studies.

The questionnaire was divided into two parts. The first part consisted of questions on professional data – designation, type of practice, and experience. The second part consisted of 18 questions to assess the perception and usage of masks. The questionnaire was fabricated in the English language. The questionnaires were distributed through the Google Forms platform. A voluntary informed consent was obtained before answering the questionnaire.

The data collection was conducted in the month of January 2021. Necessary ethical clearance for the study was obtained from the Institutional Ethical Committee.

Statistical analysis

All the responses received were coded and analyzed. Results were expressed as the number and percentage of respondents for each question and were analyzed using the SPSS Version 17 software. A Chi-square test was performed to compare the response with the year of study and designation, and the level of significance was set at $P = 0.05$.

RESULTS

A total of 236 responses were obtained of which 29 were either incomplete or not willing to participate. After excluding these 29 samples, the final sample size was 207. [Table 1] shows the response to questions on perceptions and use of masks and the impact of the COVID-19 pandemic.

About 40% of the respondents ($n = 81$) were faculty/practitioners. The rest were house surgeons/postgraduate students. Among the faculty, 67.9% had both institution-based and private practice.

Over 60% of the respondents had treated patients during the pandemic. About 57% reported having done aerosol-generating procedures (AGPs). Among them, about 67% used N95 masks and 8% used a combination of N95 and surgical masks during the AGP. All the respondents agreed that the pandemic had influenced/changed the preference of masks for AGP.

About 61% agreed to have performed non-AGP during the pandemic. Among them, over 54% used N95 masks and 10% used a combination of N95 and surgical masks during the non-AGP. Over 93% of them reported that the pandemic has changed the preference for masks for non-AGP.

About 58% of the study samples were not aware of the classification of masks. About 63.8% reported changing masks for every patient and all of them agreed that pandemic has influenced this habit. Only 19.3% agreed about reusing a single-use mask. Over 91% followed the recommended guideline for mask disposal. Over 96% of the study participants agreed that the pandemic has increased their awareness regarding the use of masks. About 76% felt that dentists were better protected against COVID infection due to the habitual wearing of masks as a part of their profession. About 71% experienced side effects such as pain/pressure on the face and ears. About 56% reported breathing difficulties while wearing masks. About 86% felt that the change in mask practices will continue after the pandemic. Over 77% reported that they were asked for advice regarding the selection of masks.

DISCUSSION

The practice of using mouth masks routinely in dentistry dates to the end of the 19th century. These masks were

Table 1: Response to questions on perceptions and use of masks and the impact of COVID-19 pandemic.

S. No.	Question	Options	Response, n (%)
1.	Have you worked on patients during the COVID-19 pandemic	Yes No	125 (60.4) 82 (39.6)
2.	Have you done aerosol generating procedures during the pandemic? If yes, during aerosol-generating procedures, which type of masks do you use?	Yes No Surgical N95 Both	118 (57) 89 (43) 26 (24.3) 72 (67.3) 9 (8.4)
	Has the pandemic influenced/ changed your preference of masks for aerosol-generating procedures	Yes No	118 (100) 0 (0)
3.	Have you done non-aerosol-generating procedures during the pandemic? If yes, during aerosol-generating procedures, which type of masks do you use?	Yes No Surgical N95 Both	126 (60.9) 81 (39.1) 41 (35) 64 (54.7) 12 (10.3)
	Has the pandemic influenced/ changed your preference of masks for aerosol-generating procedures.	Yes No	118 (93.7) 8 (6.3)
4.	Are you aware of the various classification of masks based on levels (levels 1, 2, and 3) or FFP1/2/3 or ATSM? If yes, has the pandemic increased your knowledge regarding various specifications and classifications of masks	Yes No Yes No	86 (41.5) 121 (58.5) 56 (65.1) 30 (34.9)
5.	Do you change your mask for every patient? If yes, has the pandemic influenced this behavior?	Yes No Yes No	132 (63.8) 75 (36.2) 120 (90.9) 12 (9.1)
6.	Do you reuse a single-use mask? Has the pandemic influenced this behavior	Yes No Yes No	40 (19.3) 167 (80.7) 139 (67.1) 68 (32.9)
7.	Do you follow the recommended guidelines for disposal of masks? If yes, has the pandemic influenced this behavior	Yes No Yes No	190 (91.8) 17 (18.2) 153 (80.5) 37 (19.5)
8.	The pandemic has increased your awareness regarding the usage of masks routinely used before the pandemic	Yes No	199 (96.1) 8 (3.9)
9.	Dentists, due to the habitual use of masks in daily practice are better protected compared to other health-care providers?	Yes No	158 (76.3) 49 (23.7)
10.	It was easier for dentist to adopt to the behavioral change of wearing masks due to the habitual use of masks, as a part of their profession	Yes No	192 (92.8) 15 (7.2)

(Contd...)

Table 1: (Continued).

S. No.	Question	Options	Response, n (%)
11.	Have you experienced any side effects such as pain/pressure on face and ears due to wearing of masks?	Yes No	148 (71.5) 59 (28.5)
12.	Have you experienced any breathing difficulty while wearing masks?	Yes No	117 (56.5) 90 (43.5)
13.	Do you feel there is still a lack of awareness among dentists regarding proper selection, usage, and disposal of masks?	Yes No	176 (85) 31 (15)
14.	Do you feel the change in mask practices will continue after the pandemic?	Yes No	178 (86) 29 (14)
15.	Have you been (as a habitual user of masks as a profession) asked for advice regarding selection of masks?	Yes No	161 (77.8) 46 (22.2)
16.	Which mask do you prefer when not working on patients?	Surgical N95 Cloth	70 (33.8) 49 (23.7) 88 (42.5)
17.	Do you continue to wear the same mask outside the clinic?	Yes No	60 (29) 147 (71)
18.	Do you prefer valved masks to non-valved masks during this pandemic?	Yes No	69 (33.3) 138 (66.7)

mainly recommended for the protection against bacteria and viruses aerosolized during treatment.^[8] Since the onset of the COVID-19 pandemic, mouth masks have become a clothing accessory that is worn every day and everywhere. Studies indicate that public mask wearing is most effective at reducing the spread of the virus when compliance is high.^[9]

With the onset of the new “mask culture” during the pandemic, the awareness regarding masks and their use has increased in all sections of society. This study thus focuses on the perceptions and usage of masks among a potential profession with a high risk of transmission of the virus – the dental practitioners. The nature of the dental profession demands the proximity of the dental team with patients, together with the use of AGP and compressed air (which means most of the dental procedures), the disease could readily spread from infected patients to the dental team, and vice versa, and subsequently to other patients, if appropriate protective infection control measurements are not undertaken.^[10] The dental professionals are at high of human-to-human transmission through non-AGP as well, especially when patient coughs or sneezes. During dental practice, the central areas of the face such as the inner part of the eyes and around the nose were the most contaminated

areas. These parts are the important areas for transmission of infection.^[11]

Considering the risk of transmission, dental treatment was largely restricted to emergency emergent and urgent procedures after a thorough risk assessment, during the initial months of the pandemic.^[12] With a better understanding of disease transmission and infection control routinely followed in dental settings, the recent literature indicates that the transmission risk is less in dental settings^[13] One probable reason for this is because, before the COVID-19 pandemic, dental providers used masks, gloves, and protective eyewear in routine care.^[13-15] This study was an attempt to understand the impact of COVID-19 on the “mask practices” of dentists.

The study included dental practitioners attached to educational institutions as well as practitioners with independent practice, dental house surgeons, and postgraduate students. Over 60% of the respondents reported having worked on patients during the pandemic. A significant difference in response was noted between practitioners/faculty and house surgeons. The study was conducted during a period when the house surgeons (a significant number in this study) were performing limited treatment. About 57% of the respondents had performed AGPs and over 75% used N95 masks alone or in combination with surgical masks. The practice of using N95 masks for AGP was better compared to a worldwide survey conducted by Ahmed *et al.* in March 2020^[16] and Ravi *et al.* in Andhra Pradesh in 2020.^[2] About the non-AGPs, over 65% used N95 alone or in combination with surgical masks. This could be attributed to the latest guidelines issued by various authorities regarding dental practice.^[3,10,12,14,17,18] It is noteworthy that all of them agreed that the pandemic had changed their behavior regarding the selection of masks for AGPs.

The majority of respondents agreed that the pandemic had influenced a change in the use of masks concerning changing masks after every patient (65.4%), not reusing single-use masks (80.7%), and disposal of masks as per recommended guidelines (91.4%). This change, despite the prolific use of masks among dentists before the COVID pandemic, reflects the deficiencies in the mask practices before the pandemic. Over 96% of the respondents agreed to the fact that the pandemic has increased the awareness regarding the masks that were routinely used by them before the pandemic, further highlights this point.

Over three-fourths of the study, the population agreed that habitual mask usage among dentists makes dentists better protected compared to other health-care professionals and over 92% believed that it was easier for the dentist to adapt to the behavioral change of wearing masks due to the habitual occupational use. Pain and pressure on the face and ears, difficulty in breathing, and “mask mouth” have become common issues following prolonged usage of masks.^[19,20]

It is important to note that over 83% believed that there is still a lack of awareness among dentists regarding the proper selection, usage, and disposal of masks among dentists. This further reflects the improper mask practices among dentists. This study throws light on the gap in knowledge and practices of a group of professionals – the dental professionals, who, compared to other health-care professionals have a long history of use of masks as a routine infection control measure while treating patients. The pandemic has not only increased the awareness and practices of usage of masks among the public at large but also the dental professionals. The study also highlights the need for increasing the awareness regarding selection, usage, and disposal of masks among health-care professionals, especially during this pandemic to minimize disease transmission in health-care settings.

CONCLUSION

The perceptions and knowledge regarding the usage, selection, and disposal of masks among the population studied have improved following the COVID-19 pandemic. Considering dental professionals as a cohort involved in regular usage of masks for decades, better knowledge and practice related to the use of masks is warranted. The study also suggests the need to improve the awareness among health-care professionals, especially during the existing pandemic that can improve the infection control practices in health-care settings.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Ameena NB, Ramanarayanan S, Kuruvilla S, Latti P. Perceptions and usage of masks among dental professionals – The impact of COVID. *J Global Oral Health* 2022;5:75-9.