

## EFFECTS OF WEARING MASKS DURING PANDEMIC ON ORAL HYGIENE PRACTICES, ORAL CONDITIONS, ESTHETIC CONCERN, AND DENTAL CARE IN KERALITES

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### **ABSTRACT:**

**AIM:** Through this research we are trying to find out the effect of wearing facemasks on oral hygiene practices, oral conditions, esthetic concern and dental esthetics. **METHODOLOGY:** A cross sectional study was conducted among the natives of Kerala State aged between 15- 30 years. Descriptive analysis and Chi square tests were used to analyze the collected data. **RESULTS:** 92.5% of participants who wear mask for less than 3 hours in a day experience an increase in tooth decay or gum disease after obligatory use of facemask. 76.5% of participants who wear mask for more than 8 hours feel confident to interact with people. **CONCLUSION:** Due to obligatory use of facemask, chances of occurrence of tooth decay or gum disease is significantly increased. With the use of facemask, people must be motivated for maintaining oral hygiene habits. People felt more confidence in interacting with people while wearing mask, so dentist must be aware of reduction in number of patients.

**KEY WORDS:** Oral hygiene, Face mask, Dental esthetics

### **INTRODUCTION:**

The SARS – COV 2 that cause the COVID -19 triggered a global outbreak infecting more than 146 million people worldwide and causing over three million deaths since December, 2019[(1),(4)]. Among all the plausible routes, increasing evidence suggests that airborne transmission of SARS-COV-2 via respiratory droplets and aerosols is most likely responsible for the rapid spread (4). NCOC (National Command and Operation Centre) to improvise and stop the spread of disease provided with pointers that WHO (World Health Organisation) gave regarding precautionary measures. These precautionary measures include mask wearing and social distancing. (5) Among those, the use of face masks in public places has been strictly recommended. (1). The spread of COVID-19 pandemic creates so many consequential challenges for dentistry (2). The continuous use of face mask can have impact on oral

hygiene habits, and oral conditions like dry mouth, dental caries, halitosis (bad breath) and gingivitis [(3),(5)]. Halitosis might be related with intra or extraoral factors. Most instances of halitosis originate intraorally and are related to factors such as saliva, poor oral hygiene, plaque related gingival and periodontal diseases, tongue coating, and dental caries(6). There has been previous work on self perceived halitosis and continuous mask wearing in Brazil and Germany, which showed a positive association between the two factors [(3),(6),(7)]. It is possible that continuous mask wearing may influence the concentrations of odorants inside the mask or the psychology of an individual giving rise to an increased perception of bad breath(6). The obligatory use of facemasks may have an impact on changing the perspective of patients in seeking dental care. As the transmission of COVID-19 is exponential and dental clinics are considered as a high risk environment for

virus transmission , we can predict an increased level of fear from visiting dental clinics and getting dental treatment during this pandemic(9) Many patients seek dental treatment as they have esthetic complaints. (1).During interpersonal interactions the first features that are observed are the eyes and the mouth of other people, therefore the lower third of face is a very important aspect.(10).However, as the masks cover the lower third of the face, people may have been neglecting the aspects related to oral hygiene and dental esthetics. (1) Also, the risk of nosocomial transmission led the routine dental care to be temporarily suspended in several countries and was restricted to emergency treatments (2). For patients with orthodontic appliances , closing the dental offices was a major issue, as orthodontic treatments last for more than a year, and require regular checkup(8).

**MATERIALS AND METHODOLOGY:**

This is a cross sectional study conducted between October 2022 to November 2022. Participants were selected by using sampling.

**INCLUSION CRITERIA:**

The study was conducted among the natives of Kerala State, India. The questionnaire was sent to 372 Keralites aged between 15 to 35 years.

**EXCLUSION CRITERIA:**

Participants who did not consent to the survey were excluded from the survey

**METHODOLOGY:**

A cross sectional survey was conducted among selected study population. The survey was conducted online through the medium of google form. “EFFECTS OF WEARING MASKS DURING PANDEMIC ON ORAL HYGIENE PRACTICES, ORAL CONDITIONS, ESTHETIC CONCERN, AND DENTAL CARE IN KERALITES.” (google.com). We prepared a questionnaire consisting of a total of 25 questions, including the demographic details as well as questions pertaining to their knowledge and awareness about the effect on wearing facemasks on oral hygiene practices, oral conditions, esthetic concern and dental care. The questionnaire was distributed among the participants by means of email and social media platform including WhatsApp and Telegram. Informed consent was taken from all the participants at the beginning of the survey. The participants were asked to choose an appropriate response to each questions from the set of options provided under each questions. Data was collected from the recorded responses.

**STATISTICAL ANALYSIS:**

The collected data was analyzed using SPSS software 25.0. The data was analyzed using descriptive statistics and association among the variables were done using Chi square test.

**RESULTS:**

The study was completed with 371 responses.

Figure 1 shows that 82% of respondents were in the age group of 21-25 years, 8% of people belong to 26-30 years, 8% belong to 15-20 years, and 2% belong to 31-35 years group.

**Figure 1: Frequency of Age Distribution**

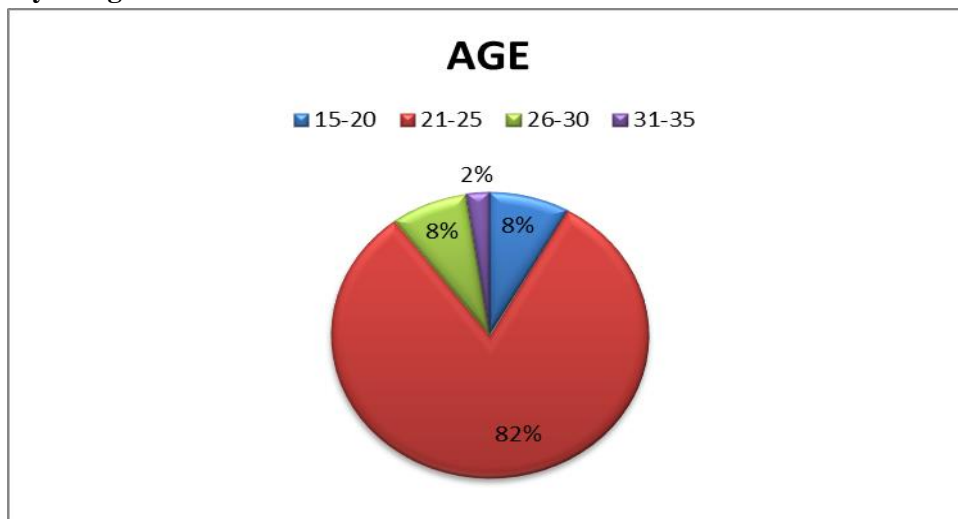


Figure 2: Shows That 61% of Respondents were females and 39% were males

**Figure 2: Frequency of Sex Distribution**

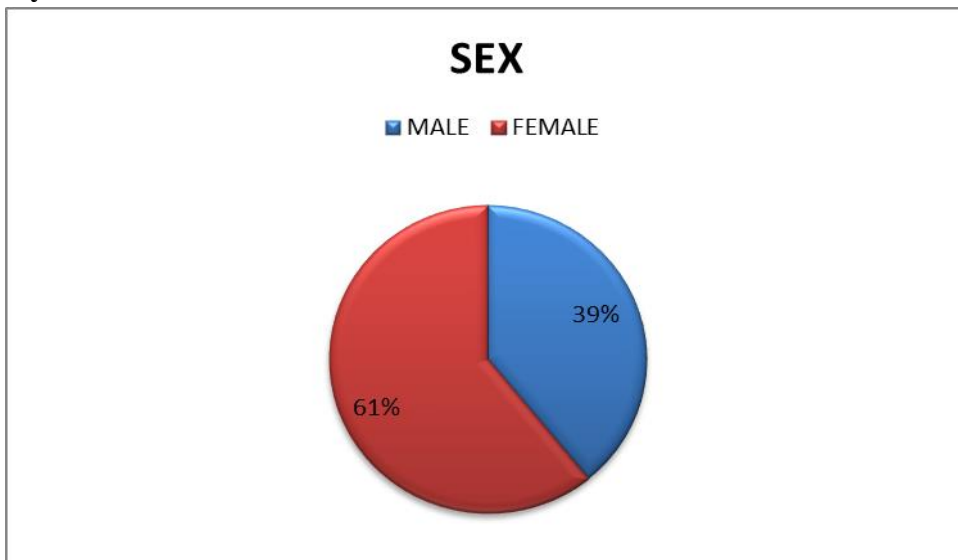


Figure 3 shows 70% of the respondents were unemployed, 16% of the people were professionals, and 14% of the respondents were skilled workers.

**Figure 3 : Frequency of Occupation Distribution**



Table 1 shows the frequency of awareness among the participants. 100% of participants use toothbrush and toothpaste as cleaning aids. 74.9% of people do not use dental floss or interdental brushes for oral hygiene maintenance. 64.7% of participants use facemask regularly after the outbreak of COVID 19. 60.1% of participants uses surgical mask. 48.5% of them wear for 3-8 hrs in a day. 84.4% of participants responded that there is no decrease in frequency and efficiency of oral hygiene with the use of facemask. About 31.1% of

people reported that there is reduction in the use of mouthwashes. 54.4% of participants experience bad breath. 58.2% of people reported that their perception of breath changed during wearing facemask. About 36.1% of people use mouthwashes but not on a regular basis. 40.4 % of participants do not experience dry mouth after wearing mask for prolonged period. About 91.4% of participants noted an increase in tooth decay or gum disease after obligatory use of facemask. 61.5% of people feel more confident to interact with

people while wearing facemask. 71.7% of participants give very importance for seeking dental treatment to improve dental and smile esthetics. 26.1% of participants has undergone extraction procedure during their last dental visit. 84.1% of participants did not felt

the need of emergency dental care during quarantine period. 61.3% of participants got influenced to do orthodontic treatment after the obligatory use of facemask during pandemic.

**TABLE 1: FREQUENCIES**

Slno:			F	P (%)
1.	<b>Which cleaning aid are you using for oral hygiene maintenance?</b>	Toothbrush and toothpaste	371	100
		Toothbrush and toothpowder	0	0
2.	<b>Do you use dental floss or interdental brushes for oral hygiene maintenance?</b>	Yes	93	25.1
		No	278	74.9
3.	<b>Do you regularly use facemask after the outbreak of COVID 19?</b>	Yes	240	64.7
		No	43	11.6
		Not very often	88	23.7
4.	<b>Which type of mask are you wearing?</b>	Surgical mask	223	60.1
		N 95 mask	98	26.4
		Cloth mask	42	11.3
		Others	8	2.2
5.	<b>How long you wear mask in a day?</b>	Less than 3 hrs.	174	46.9
		3-8 hrs.	180	48.5
		More than 8 hrs.	17	4.6
6.	<b>Does the frequency and efficiency of your oral hygiene maintenance decreases with the use of facemask?</b>	Yes	58	15.6
		No	313	84.4
7.	<b>If yes, which one is affected?</b>	Toothbrushing	17	18.9
		Cleaning of mouth after food	20	22.2
		Use of mouthwashes	28	31.1
		Others	25	27.8
8.	<b>Did you ever experience bad breath?</b>	Yes	202	54.4
		No	169	45.6
9	<b>Has wearing face mask changed your perception of your breath?</b>	Yes	216	58.2
		No	155	41.8
10	<b>Do you use mouth wash?</b>	Yes	49	13.2
		No	188	50.7
		Yes, but not regularly	134	36.1
11	<b>Do you experience dry mouth after wearing mask for prolonged period?</b>	Yes	111	29.9
		No	150	40.4
		Sometimes	110	29.6
12	<b>Do you notice an increase in</b>	No	32	8.6

	<b>tooth decay or gum disease after obligatory use of face mask?</b>	Yes	339	91.4
13	<b>Did you ever feel insecure about your smile?</b>	Yes	133	35.8
		No	238	64.2
14	<b>Do you feel more confident to interact with people while wearing face mask?</b>	Yes	228	61.5
		No	143	38.5
15	<b>Which grade will you give for the importance of seeking dental treatment to improve dental and smile esthetics?</b>	Very important	266	71.7
		Not much important	99	26.7
		Not at all important	6	1.6
16	<b>When is your last dental visit?</b>	<3 months	88	23.7
		3-6 months	53	14.3
		1 year ago	90	24.3
		Never visited	49	13.2
		Not remembered	91	24.5
17	<b>Which dental care did you seek in the last dental visit?</b>	Filling	53	14.3
		Extraction	97	26.1
		Cleaning	12	3.2
		Ortho treatment	94	25.3
		Others	115	31
18	<b>“The need for dental treatment influenced</b>	Increased	46	12.4
		Decreased	44	11.9
		No change	281	75.7
19	<b>Did you ever felt the need of emergency dental care during quarantine period?</b>	Yes	59	15.9
		No	312	84.1
20	<b>Did the obligatory use of mask during pandemic influence your face decision to have an orthodontic treatment( straightening of crowded teeth or smile correction) ?</b>	Yes	50	13.5
		No	321	86.5
21	<b>If yes, how</b>	Decided to do ortho treatment	46	61.3
		Decided to postpone ortho treatment	29	38.7

### **CROSSTABS:**

Table 2 shows that while comparing the regular use of facemask and frequency and efficiency of oral hygiene maintenance, 15.6% participants responded that there is decrease in oral hygiene maintenance 29.1% of participants reported that there is decrease in use of mouthwashes. While comparing regular use of

facemask and the need for dental treatment, 76.7% of people reported that there is no influence between them. While comparing regular use of facemask and influence on the decision to have an orthodontic treatment, 85.4% participants reported that there is no influence on the same. There is no significant relation reported.

**TABLE 2:**

		Do you regularly use facemask after the outbreak of COVID 19			p-value
		Yes	No	Not very often	0.792
Does the frequency and efficiency of your oral hygiene maintenance decreases with the use of facemask?If yes, which one is affected;	Toothbrushing	18.2	33.3	13	
	Cleaning of mouth after food	21.8	8.3	30.4	
	Use of mouthwash	29.1	33.3	34.8	
	Others	29.1	25.0	21.7	
Did you ever feel insecure about your smile?	Yes	37.9	25.6	35.2	0.296
	No	62.1	74.4	64.8	
The need for dental treatment influenced by the regular use of face mask"	Increased	13.3	7	12.5	0.352
	Decreased	10	11.6	17	
	No change	76.7	81.4	70.5	
Did the obligatory use of face mask during pandemic influence your decision to have an orthodontic treatment (straightening of crowded teeth or smile correction) ?	Yes	14.6	7	13.6	0.404
	No	85.4	93	86.4	

**TABLE 3:**

Table 3 shows that while comparing the duration of wearing masks in a day and the type of mask wearing, 54.8% of participants were using cloth mask for 3-8 hrs in a day There is no significant relation noted.

		Which type of mask are you wearing?				p value
		Surgical mask	N-95 mask	Cloth mask	Others	0.395
How long you wear mask in a day ?	Less than 3 hrs	49.3	41.8	40.5	75	
	3-8 hrs	47.1	51	54.8	25	
	>8 hrs	3.6	7.1	4.8	0	

**TABLE 4:**

Table 4 shows that while comparing the duration of wearing masks in a day and presence of dry mouth after wearing mask for prolonged period, 47.1% population who wear mask for more than 8 hrs experience dry mouth. There is no significant relation noted. While comparing the duration of wearing mask in a day and increase in tooth decay or gum disease after use of facemask. 92.5% participants who wear mask for less than 3 hrs in a day experience an increase in tooth decay or gum disease after the obligatory use of facemask. There is a significant relation noted between both of them (  $p=0.008$ ). While comparing the duration of wearing masks in a day and feeling of confidence to interact with people while wearing facemask, about 76.5 % participants who wear mask for more than 8 hrs feel confident to interact with people. There is significant relation noted. ( $p<0.001$ ).

		How long you wear mask in a day ?			p value
		Less than 3 hrs	3-8 hrs	>8 hrs	0.275
Do you experience dry mouth after wearing mask for prolonged period?	Yes	25.3	32.8	47.1	
	No	42.5	38.9	35.3	
	Sometimes	32.2	28.3	17.6	
Did you ever notice an increase in tooth decay or gum disease after obligatory use of face mask ?	No	7.5	7.8	29.4	0.008*
	Yes	92.5	92.2	70.6	
Do you feel more confident to interact with people while wearing face mask ?	Yes	48.3	72.8	76.5	< 0.001*
	No	51.7	27.2	23.5	

## **DISCUSSION:**

From the analysis of the results yielded from our study, we deciphered the following facts and information. All the participants use toothbrush and toothpaste as cleaning aids while about 25.1% of participants use dental floss or interdental brushes as additional oral hygiene aids. This conclusion is supported in accordance with the study conducted by Syed Wali Peeran et.al.(12) Most of the participants are wearing surgical mask regularly after COVID-19 outbreak. 48.5% of participants wear mask for about 3-8 hrs in a day. This conclusion is in accordance with the study conducted by Kwon. M et.al (13). About 80% of the participants responded that there is no decrease in frequency and efficiency of oral hygiene maintenance with use of facemask .Even though the people are using facemask, they still maintain their oral hygiene.This conclusion is in converse to the study conducted by Celia- Regina- Maio- Pinzan -Vercelino et al. (1). Most of the participants noted an increase in tooth decay or gum disease. About half of the participants experience bad breath after obligatory use of facemask. This conclusion is supported in accordance with the study conducted by Kanzow.P.et.al.(7). Most of the participants feel more confident to interact with people while wearing mask. About 71.7% people give very importance for seeking dental treatment to improve the dental esthetics and they also got influenced to do orthodontic treatment after obligatory use of facemask during pandemic. This conclusion is in converse to the study conducted by Alessandra Amato et.al.(11) On comparing the duration of wearing mask in a day with increase in tooth decay or gum disease, it showed that there is a significant relation between them.( $p= 0.008$ ). 92.5% of the participants who wear facemask for less than 3 hours in a day experience an increase in tooth decay or gum disease after obligatory use of facemask. On comparing the duration of wearing facemask and feeling of confidence to interact with people while wearing mask, there is again a significant relation noted (  $<0.001$ ). 76.5% of participants who wear mask for more than 8 hours feel confident to interact with people.This conclusion is in converse to the study conducted by Grenville.E et. al (14)

## **CONCLUSION:**

Due to obligatory use of face mask, chances of occurrence of tooth decay or gum disease is

significantly increased, With the use of facemask, people must be motivated for maintaining oral hygiene habits. People felt more confidence in interacting with people while wearing mask, so dentist must be aware of reduction in number of patients.

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