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A GLOBAL PERSPECTIVE IN SELF-REPORTED BRUSHING, BRUXISM AND TMD SYMPTOMS DURING COVID-19 LOCKDOWN

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BACKGROUND: The COVID-19 pandemic led lockdowns has created enormous stress disrupting the daily habits and routines of the worldwide population. One might consider hand hygiene more important than brushing one's teeth in these unprecedented times but it is prudent to keep in mind that oral health is a window to one's general health. **OBJECTIVES:** To assess the general public's perception of their oral hygiene habits and survey their self-reported brushing habits. **METHODS:** This is a descriptive, cross-sectional, self-administered structured questionnaire-based study. A questionnaire of 24 questions was shared online to which 1021 responses were received from different parts of the world. April, 1st 2020- April 14th 2020 during the period of lockdown. **RESULTS:** Regarding self-reported brushing our results indicate that a large portion of the population did not observe any major changes in their brushing habits during the quarantine period compared to their everyday routine before the lockdown for COVID19. Probing into TMD symptoms we found that a greater frequency of females compared to males reported an increased sensation of pain and discomfort in facial muscles. **CONCLUSION:** COVID-19 is here to stay. It is imperative to assess the general public's perception of their oral hygiene practices and habits during the lockdown period of COVID-19 pandemic. An estimate of the population vulnerable of seeking dental treatment by the end of this pandemic depends on how long it lasts.

Keywords: Coronavirus; Pandemic; Lockdown; Oral Hygiene; Habits; Dental Patients

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INTRODUCTION

An outbreak of novel coronavirus disease that originated in Wuhan, China has influenced every aspect of life. Within a few months, COVID-19 has spread globally and in March 2020, the World Health Organization (WHO) declared it as a controllable pandemic disease.^{1,2}

A suggested route of human-to-human transmission is through air-borne droplets or coming into contact with an infected person or a contaminated surface.³ The incubation period of COVID-19 has been estimated at 5-14 days.^{4,6} The infected person usually presents with upper respiratory tract infection (RTI) and complains of high-grade fever, a dry cough and dyspnea.⁷ Considering the vital role of the body's immune system, elderly patients are more at risk than younger age groups.⁸ No vaccine is available as of now and patients have to rely on palliative therapy such as vitamins A, C, D and general healthcare until the body's immune system can eradicate the infection.⁹

Since March, 2020 a global lockdown has been put in place while restrictions are imposed on movement both local and internationally, and public gatherings which has led to the shutdown of schools and large-scale business places to restrict the spread of disease with observation of social distancing forcing a large number to stay at home. Fear and anxiety are powerful emotions which might be aggravated by the overwhelming amount of news on the pandemic leading people to adopt detrimental lifestyle regarding diet and habit choices to comfort themselves, which at the same time would lead to poor dental health as well as corresponding parafunctional habits associated with psychological stress.¹⁰

The novelty of the COVID-19 pandemic and subsequent lockdowns has created enormous stress disrupting the daily habits and routines of health and wellness for many individuals. Due to this casual smoker might increase their intake to combat the stress, no social communication can lead to debilitating habits like lack of self-care and oral hygiene while at the same time developing an affinity for sweet food to combat the stress, while others might develop masticatory parafunctional habits due to the increased level of stress. This neglect is more detrimental considering dental hospitals have been closed, and more emphasis has been placed on hand washing and masks than maintaining oral health.

To the best of our knowledge, very limited studies have been conducted on this topic so far. Learning more about the concerns, knowledge, attitude and behavior of the public during a pandemic disease outbreak can be crucial to improve communication efforts by public health professionals inclusive of dental practitioners. The main aim of this study is to assess the general public's perception about their oral hygiene habits and survey their self-reported brushing habits and any TMJ symptoms that they may have experienced during the COVID-19 pandemic.

METHODS

This is a descriptive, cross sectional, self-administered structured questionnaire-based study. A questionnaire of 24 questions was shared online to which 1021 responses were received from different parts of the world. The response to the questionnaire was received from the time period of April, 1st 2020- April 14th 2020 during the period of lockdown.

A pilot study was conducted on 50 participants after which some modifications were made to validate the questionnaire further. In addition to demographic information including the participant's age, gender, education, profession and country, the questionnaire contained a number of open and close-ended questions to make it flexible for the participants.

In the wake of dental hospitals being shut down, this research questionnaire was tailored to gauge the perception of the public towards their oral health and contributing habits, which might provide and indicator on how vulnerable they would be to receiving dental care.

The data obtained was compiled, tabulated and subjected to statistical analysis using SPSS (Statistical Package for Social Sciences) version 16.0. All descriptive data were projected as frequencies and percentages and compared using the chi-square test. The level of statistical significance of most of the performed tests was p -value < 0.05 .

RESULTS

The dominant age range in our data was 18-27 years as 58.9% who filled the survey were in this age group. People from the age range of 28-37 years

made the second highest percentage of 29 % that participated in our study. About 60.1% of our participants were females while the males comprised 39.9% of those who filled the online survey.

Brushing and Oral hygiene: We asked the participants in our study if they focused more on washing their hands rather than brushing their teeth during the lockdown period of covid-19 pandemic 46.5% said yes , 34.5% said they focused on both equally, while 18.9% said no they didn't focus more on washing their hands. About frequency of brushing, 60 % participants affirmed brushing twice a day and 29.3% once daily while the rest didn't brush at all, while before the lockdown 62.9% participants agreed on brushing twice a day before the lockdown was observed and 27.8% reported brushing only once a day while the remaining didn't brush at all. On a question posed about the personal perception of oral hygiene maintenance, 46.8% of participants agreed that their oral hygiene measures have improved in the quarantine period 32.2% reported a decline in their

oral hygiene maintenance and 21 % said they felt no difference.

Self-reported Bruxism and TMD symptoms: We asked whether they noticed any developing habit of grinding or marbling their teeth about 78.7% said they did not perceive anything of that sort 13.2% said yes they did, 4.7% participants said they were not sure while 3.3% said that they have been told by a parent/spouse about night bruxism. The participants were asked whether they felt any tightening or soreness around their facial muscles to which 70.5% said they didn't perceive such a discomfort in facial muscles, 14.3% of participants affirmed experiencing such a discomfort, 4.7% said they did not know, while a portion of the population 10.4% replied in the affirmative, but added that they used to experience this before the pandemic as well. Relating to TMD symptoms participants were asked about perceived clicking, to which 73.4% said no, 10.6% replied affirmatively, 10.1% said that they have been experiencing it before the lockdown period and about 4.8% of participants said that they were not sure, however a smaller percentage of 1.3% said they recently developed these symptoms

Age		Frequency	Percent
	18-27	601	58.9
	28-37	296	29.0
	38-47	64	6.3
	48-57	47	4.6
	58-67	8	.8
	68-77	5	.5
	Total	1021	100.0
Gender		Frequency	Percent
	Female	614	60.1
	Male	407	39.9
	Total	1021	100.0

Do you tend to focus more on washing your hands rather than brushing your teeth during this COVID-19 pandemic		Frequency	Percent	
		It is the same as before	352	34.5
		No	193	18.9
		Yes	475	46.5
How many times a day do you brush your teeth during this COVID-19 quarantine period?		Frequency	Percent	
	I don't brush my teeth at all	12	1.2	
	More than twice	97	9.5	
	Only once	299	29.3	
	Twice	613	60.0	
How many times a day did you brush your teeth before this COVID-19 pandemic?		Frequency	Percent	
	More than twice	84	8.2	
	Not at all	11	1.1	
	Only once	284	27.8	
	Twice	642	62.9	
Do you feel that quarantine has affected your personal hygiene habits?		Frequency	Percent	
	I feel no difference	214	21.0	
	No	329	32.2	
	Yes	478	46.8	
When was the last time you visited a dentist for a routine check-up/treatment procedure?		Frequency	Percent	

	I have never visited a dentist	91	8.9
	Less than 6 months ago	418	40.9
	More than 2 years ago	205	20.1
	More than 6 months ago	307	30.1
	Total	1021	100.0

During this COVID-19 pandemic, have you found yourself grinding/marbling your teeth?		Frequency	Percent
	I am not sure	48	4.7
	I have been told by a parent/sibling/spouse that I do	34	3.3
	No	804	78.7
	Yes	135	13.2
During this pandemic, have you experienced any discomfort in and tightening of the muscles of your face?		Frequency	Percent
	I don't know	48	4.7
	I have started experiencing this lately	15	1.5
	No	720	70.5
	Yes	131	12.8
	Yes, but I used to experience this before the pandemic as well	106	10.4
	Yes, but I used to experience this before the pandemic as well, I have started experiencing this lately	1	.1
Do you experience clicking sounds in your jaws?		Frequency	Percent
	I am not sure	48	4.7

No	749	73.4
Yes	108	10.6
Yes, and I was not aware of this clicking before	13	1.3
Yes, but I have been experiencing it way before the pandemic	103	10.1
Total	1021	100.0

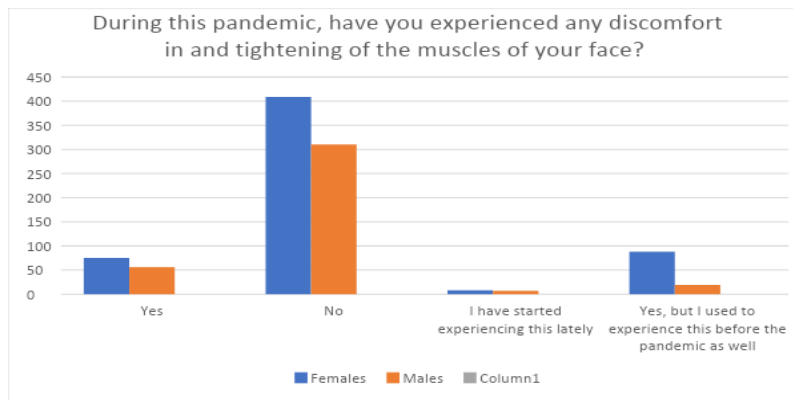


Figure 1

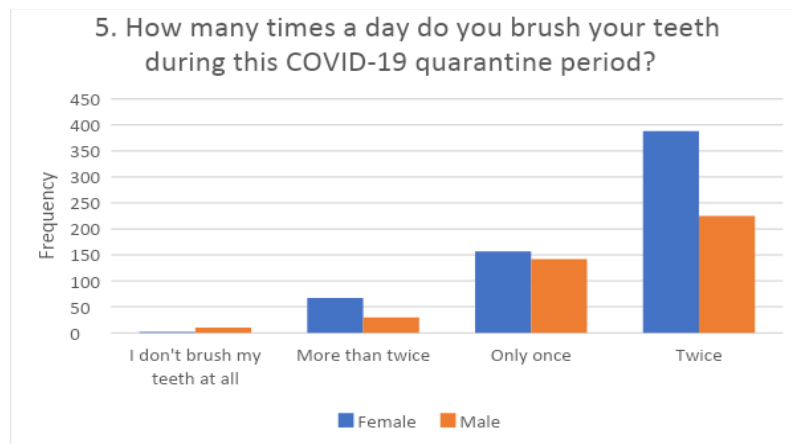


Figure 1

DISCUSSION

The CDC has issued a set of guidelines to protect the communities from contracting or spreading the COVID infection.¹¹ With an increased emphasis on washing hands to prevent the spread of infection we posed an online question “If people felt

they focus more on washing hands than brushing their teeth” to which 34.5% subjects answered that they focus on both equally, About 18.9% of the subjects exclaimed their focus hasn’t shifted to washing hands, while the remaining 46.5% said they did feel their focus on washing hands increased.

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To the question “how many times a day do you brush your teeth during the covid-19 quarantine period” about 9.5% people said they brush their teeth more than twice a day, 29.3% said only once and about 60% said they brush their teeth twice a day while still others didn’t brush at all. On the contrary to the question, how many times a day did you brush your teeth before the covid-19 pandemic, about 8.2% people said more than twice, 27.8 % said only once and 62.9% said they brushed twice a day while remaining didn’t brush at all which indicated results similar to those observed before quarantine as shown in a study done by Nutrition Center (Voedingscentrum) that looked at the concern and increased focus on better health during the pandemic in Netherlands. Their results indicated that behaviors are learned over years and abrupt changes are less likely despite the quarantine period and lockdown measures most people would adhere to their everyday habits.¹²

The chi-square test between brushing frequency and gender indicated that a greater percentage of females brushed their teeth in comparison to men (fig 1) which is in accordance to many studies and surveys that indicate females to be more consistent in hygienic practices.^{13,14} A meta-analysis published in 2016 also established that females are 50% more likely to adopt non-pharmaceutical behaviors (i.e. washing hands, wearing facemask) during a pandemic or endemic.¹⁵

Along with brushing and oral hygiene practices we surveyed for TMD symptoms and oral habits during the lockdown, in our survey a total of 3.3% participants said that they have been told by a parent/spouse that they ‘marble’ their teeth during sleep in the lockdown period, 78.7% people reported no signs of sleep bruxism while 13.2% said yes they experienced marbling their teeth during the lockdown. From clinical studies the prevalence of bruxism is reported between 6.5 and 88%, while in epidemiologic surveys they are between 6–8%.^{16,17}

The quarantine guidelines and global lockdowns can lead to panic episodes, anxiety, obsessive compulsive disorders and paranoia which can be positively related with bruxism.^{18,19} Although self-reported bruxism is less reliable evidence, debilitating oral habits secondary to stress cannot be ignored completely. To find about associated TMD symptoms of facial muscles discomfort about 4.7% participants in our survey were unsure to answer, 70.5% said NO, while 15.8% said yes, while 10.4% reported as having persistent muscular pain in their

jaws, which can critically associated with TMD symptoms specially affecting patients with masticatory muscle disorders.^{20,21} In our study a greater frequency of females compared to males reported an increased sensation of pain and discomfort in facial muscles (Fig.2) many of which experienced the pain before the pandemic which is in accordance to previous literature.²² In our study however, the number of men and women experiencing facial muscular pain during the lockdown was equal. The COVID-19 pandemic mimics an emergency and threat like situation which can initiate a chain of events that conclude with higher levels of sympathetic activity causing increased autonomic stress response. With such series of events the patients are vulnerable for system overloading, a common finding in TMD patients. The autonomic deficiency may also lead to increased sympathetic activity, which if continued can cause maintenance of pain sensation especially in psychological vulnerable individuals.²³

CONCLUSION

In the light of above argument, a recently published review stated the prevalence of post-pandemic chronic orofacial pains, together with TMD, is anticipated to rise in a pattern similar to posttraumatic stress syndrome.²⁴ Being a cross sectional study with a smaller duration our results are not definitive further research depending on the duration of the lockdown and the interval of the pandemic are recommended to notice the behavior and habit changes driven by the corona virus crisis.

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