

# The Effect of Quarantine During COVID-19 Pandemic on The Oral Health Habits of The Syrian Community

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## Research Article

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# Abstract

**Introduction:** Corona Virus has appeared in the end of 2019; it belongs to a large family of viruses that can cause respiratory infections. Due to its rapid and ease spread it has become a pandemic in almost the whole world, which necessitated the imposition of quarantine procedures in order to reduce the speed of spread and the number of deaths, but these procedures may cause many effects on people, one of the most important aspects that can be affected is oral health care. This study was conducted to investigate the effect of quarantine procedures on oral health habits of the Syrian community.

**Materials and methods:** A survey was made with Google forms then published on Facebook from 4-16-2020 until 11-5-2020. The number of people corresponding to the study criteria reached 1033, the effect of quarantine procedures on changing oral health habits, number of times of brushing and the time of brushing were studied.

**Results:** Quarantine led to a change in oral health habits in 57.4% of the sample, females were significantly more affected by changing habits during quarantine ( $P = 0.020$ ), number of brushing times was not clearly affected and it was twice daily (49.4% Before quarantine, 42.1% after quarantine) as there was no statistically significant difference between the two stages in terms of the number of brushing times.

**Conclusion:** This study was one of the first studies that showed the effect of home quarantine on the oral habits of members of the Syrian community. Home quarantine did not significantly affect the change in the oral health habits of Syrians.

## Introduction

Coronavirus belongs to a large family of viruses that can cause respiratory infections whose symptoms range between the common cold and severe symptoms. Middle East respiratory syndrome (MERS-CoV) and severe acute respiratory syndrome (SARS-CoV) are among the diseases that cause viruses from the Corona family. The new generation of the virus appeared in 2019 in Wuhan - China and was named (-2SARS-CoV) to later become a pandemic that threatens the lives of individuals[1].

The emerging covid virus attacks the respiratory pathways and can be transmitted through droplets emitted through the mouth and nose when a person coughs or sneezes. It can be transmitted indirectly by touching contaminated surfaces with hands and then touching the hand to the mouth, nose and eyes, as varying numbers have been recorded for the days during which the virus can survive on surfaces. [2] A great variety of disease symptoms was recorded in people with the emerging Covid virus, the severity of symptoms was graded between moderate to severe, among the most common symptoms that were observed: Fever - cough - difficulty breathing or shortened breathing time - chills - muscle pain - cold - headache - pharyngitis - loss of sense of smell or taste [3]

The incubation period for the virus is from 2 to 14 days before symptoms appear, and during this period the person carrying the virus will be able to transmit it to others. Understanding the incubation period is very important in order to understand the importance of quarantine and social distancing. Years ago, SARS-CoV was contained globally through large-scale quarantine measures. Quarantine was also used effectively when infectious diseases spread centuries ago, such as cholera and plague, as the conditions that necessitated the imposition of quarantine at the time were similar to the current conditions that required quarantine in light of the spread of the new Corona virus. The quarantine has slowed the rate of spread and reduced the number of deaths

Quarantine aims to separate people who have been exposed to the pathogen from general society and to emphasize the adoption of health prevention methods, but adherence to quarantine can cause some individuals psychological, emotional and financial problems[4]. After the quarantine experiment conducted in 2003 in Canada when the SARS-CoV virus spread, there were significant negative effects on quarantined individuals who felt anxious, isolated, fearful, frustrated and depressed. Despite past quarantine experiences and the long history of quarantine we know little about how people understood, their attitude and behavior during the quarantine period [5].

it may be very easy for an individual to ignore his normal healthy oral hygiene habits, and according to previous studies, depressed people have a lack of oral health care and therefore it is recommended that people diagnosed with depression receive more dental services[6]. All diagnosed mental illnesses were associated with increased tooth decay, as well as increased tooth loss[7]

### **The aim of the research:**

To study the effect of quarantine on oral health habits, whether they increase or decrease.

## **Materials And Methods**

### **Study design:**

This observational cross-sectional online survey was conducted in Damascus between April 16 and May 15, 2021, in order to evaluate the oral health habits during the quarantine period

The questionnaire was designed on the Google Form website while maintaining the confidentiality of the person participating in the questionnaire and preventing the questionnaire from being answered by the same account.

The questionnaire consisted of several questions including gender, age, marital status, place of residence, educational qualification, economic status, and a question about oral health habits before and during the quarantine period. The aim of the questionnaire was to find out the effect of quarantine on people's oral health habits and link them to the other variables (educational qualification, economic status, gender and age).

On the first page of the questionnaire the participants were asked for their informed consent to participate in this research, after describing the aim and objectives of this research. Participants under the age of 18 were asked to provide their parental or legal guardian informed consent.

### Study population:

Participants were eligible if they were syrian citizen living in Damascus city, which is the capital of Syria, and the city with the highest population.

### Statistical analysis

All data analyses were carried out using IBM SPSS Statistics for Windows (Version 26) (IBM Corp., Armonk, NY, USA). All tests were two-tailed and a p-value of less than 0.05 was considered statistically significant.

## Results

The number of samples collected was (1090), and 57 (5.2%) of them were from outside Syria, so they were excluded from the sample, and thus the final sample number was (1033). The average age was (23.40 years) and ranged between 12–62 - with a mean of 5.43. The number of males was 265 (25.7%), while the number of females was 768 (74.3%). (Table 1) The socio-economic level of the sample was assessed through the (SES) indicator, where 576 (55.8%) of the sample were at the low level, (24.5%) a medium level, and finally (19.7%) a high level

Table 1  
demographic variables for the study sample

Variables		Cases	%	Variables		Cases	%
gender	Male	265	25.7%	Did the quarantine change your healthy habits	yes	593	57.4%
	Female	768	74.3%		No	440	42.6%
Social status	Single	950	92.0%	How you maintain the health of the toothbrush?	Put the brush in its own cup	290	28.2%
	Married	83	8.0%		Put the brush in a cup with the family	417	40.5%
Socio-economic situation	low level	576	55.8%		Cover the brush with its own cover	269	26.1%
	Average level	253	24.5%	Put it next to the sink	54	5.2%	
	High level	204	19.7%				

Quarantine had a change in the health habits of more than (57.4%) of the sample, while there was no change in the oral health habits of (42.6%) of the sample. (Table 1) The method of maintaining the cleanliness of the toothbrush was evaluated, and the sample showed mixed results, as the majority (40.5%) put the brush in a cup with the rest of the family, (28.2%) put the brush in their own cup, while (26.1%) covered the brush with a special cover. And (5.2%) put the brush to the side of the sink. (Table 1)

The number of brushing times was evaluated during a period before quarantine and after health, and the results did not show significant differences between the two stages, as the majority of the sample brushed their teeth twice daily (49.4% before quarantine, and 42.1% after quarantine), and there was no fundamental difference. The number of brushing times between the two phases (P = 0.716). Also, the time of brushing the teeth was evaluated during the two time periods, and the results were converged except with regard to brushing before leaving the house, where before the quarantine it was a percentage (15.8%) and was not present during the quarantine period, there was no fundamental difference between the two variables during the two time periods (P = 0.276). (Table 2)

Table 2  
Changes in oral health habits before and after the quarantine period

Variables		Before quarantine		after quarantine		Significant difference	
		Cases	%	Cases	%	P value	Significance of the test
<b>How often I brush my teeth</b>	<b>I do not brush my teeth</b>	31	3.0%	44	4.3%	0.716	<b>No</b>
	<b>Once</b>	328	31.8%	355	34.4%		
	<b>Twice</b>	510	49.4%	435	42.1%		
	<b>three times</b>	134	13.0%	165	16.0%		
	<b>More than 3 times</b>	30	2.9%	34	3.3%		
<b>The time to first brush your teeth</b>	<b>when you wake up</b>	621	60.6%	608	60.4%	0.276	<b>No</b>
	<b>Right after eating</b>	70	6.8%	88	8.7%		
	<b>Before leaving the house</b>	162	15.8%	0	0.0%		
	<b>before sleep</b>	112	10.9%	223	22.1%		
	<b>Half an hour after eating</b>	60	5.9%	88	8.7%		

Research variables were studied by comparison between males and females, where females showed a greater change in oral health habits due to quarantine (51.3% for males, 59.5% for females), and this difference was statistically significant, as the value of the level of significance was ( $P = 0.020$ ). Also, a fundamental difference was found between males and females in terms of the number of brushing times before and after the quarantine, and the time of brushing the teeth before and after the quarantine, as the value of the significance level for each of the two variables was ( $P = 0.000$ ,  $P = 0.008$ ), respectively. (Table 3)

Table 3

– Discussing significant difference between males and females in terms of the studied variables

		gender				Significant difference	
		Male		Female		value P	Significance of the test
		Cases	%	Cases	%		
<b>Did the quarantine change your healthy habits</b>	<b>yes</b>	136	51.3%	457	59.5%	0.020	Yes
	<b>no</b>	129	48.7%	311	40.5%		
<b>The number of times dispersed before quarantine</b>	<b>I do not brush my teeth</b>	23	8.7%	8	1.0%	0.000	Yes
	<b>once</b>	106	40.0%	222	28.9%		
	<b>twice</b>	109	41.1%	401	52.2%		
	<b>three times</b>	24	9.1%	110	14.3%		
	<b>More than 3 times</b>	3	1.1%	27	3.5%		
<b>The number of times dispersed after quarantine</b>	<b>I do not brush my teeth</b>	24	9.1%	20	2.6%	0.000	Yes
	<b>once</b>	110	41.5%	245	31.9%		
	<b>twice</b>	93	35.1%	342	44.5%		
	<b>three times</b>	32	12.1%	133	17.3%		
	<b>More than 3 times</b>	6	2.3%	28	3.6%		
<b>The time of the first brushing of the teeth before the quarantine</b>	<b>when you wake up</b>	129	50.0%	492	64.1%	0.000	Yes
	<b>Right after eating</b>	13	5.0%	57	7.4%		
	<b>Before leaving the house</b>	44	17.1%	118	15.4%		
	<b>before sleep</b>	48	18.6%	64	8.3%		
	<b>Half an hour after eating</b>	24	9.3%	36	4.7%		
<b>The time of the first</b>	<b>when you</b>	137	55.2%	471	62.1%	0.008	Yes

brushing of the teeth after the quarantine	wake up				
	Right after eating	17	6.9%	71	9.4%
	Before leaving the house	0	0.0%	0	0.0%
	before sleep	65	26.2%	158	20.8%
	Half an hour after eating	29	11.7%	59	7.8%

## Discussion

Oral health derives its importance from its impact on public health, in addition to its role in raising an individual's self-confidence and enhancing his ability to communicate with the surrounding community[8] The association of oral health with unhealthy habits among community members has led the World Health Organization since the beginning of the eighties to set many goals that must be achieved until 2020 under the name of dental self-care, which include reducing the percentage of intra-oral diseases and increasing individuals 'awareness of the importance of dental self-care associated with tooth brushing. More than once a day, reduce the consumption of sugars [9]. But after the emergence of the COVID\_19 virus and the challenges that came with it, dentists faced the difficulty of securing personal protective equipment, the high risk of transmission within the dental clinic, and patients 'fear of following periodic visits [10]

It was imperative to ensure that society knew about the ideal oral care procedures and the effect of home quarantine on those procedures. This study showed that the number of common brushing times among the participating Syrian individuals is in accordance with the recommendations of the World Health Organization [11] and the (FDI) [12] twice daily, with a rate of (49.4% before quarantine and 42.1% after quarantine), similar to what is common in Greece[13] also Sweden, Denmark, and Germany [14]while the number of brushing times common among some medical students in India was once [15]and less than the number of times common among school teachers in Saudi Arabia, who most of them brush their teeth three times a day [16]

While brushing the teeth upon waking was the most frequent time in the sample during both study periods, and it is contrary to the Oral Health Foundation's instructions, which recommend that brushing the teeth be the last thing an individual does before bed, in addition to again during the day. [17]The method of maintaining the brush was wrong for a large number of individuals. Several studies have shown that covering the brush or placing it in contaminated media (with other brushes or the side of the sink) increases pollution and bacterial growth on the surface of the brush [18] [19]



Home quarantine resulted in changing health habits for 57.4% of individuals, and females were more susceptible to changing habits during quarantine than males, and this may be attributed to females staying at home for longer periods than males during this period. Nevertheless, females were more interested in oral health measures, whether before the home burrow [19] [20] or during quarantine.

## Conclusion

This study was one of the first studies that showed the effect of home quarantine on the oral habits of members of the Syrian community. Home quarantine did not significantly affect the change in the oral health habits of Syrians.

### Recommendations:

1. Emphasize the importance of oral health measures for all individuals.
2. Adopting health awareness programs that include all spectrums of society.
3. Cooperation with international organizations and associations interested in public and oral health in particular to develop clear plans and strategies for disseminating correct information about self-care oral care procedures.
4. Emphasizing the role of the dentist as a trainer and observer for the application of these procedures by patients attending dental clinics and centers.
5. Conducting additional studies on the effect of home quarantine on the spread of caries and periodontal disease.

## List Of Abbreviations

COVID-19: Coronavirus Disease 19

FDA: U.S. Food and Drug Administration

SARS-CoV-2: Severe Acute Respiratory Coronavirus 2

## Declarations

### Ethics approval and consent to participate

Ethical approvals were obtained from the ethics committee of Damascus university – Syria. Participants were informed about the study purpose on the first page of the questionnaire, and they were asked to give their full informed consent to participate before filling the questionnaire. For participants under the age of 18, informed consent was obtained from the parents or the legal guardian of the participant.

In addition to that, all methods were performed in accordance with the relevant guidelines and regulations ('Sex and Gender Equity in Research – SAGER – guidelines').

## Consent for publication

Not applicable.

## Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Competing interests

The authors declare that they have no competing interests.

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## Authors' contributions

All authors have contributed equally to the conception and design of the work; and to the acquisition, analysis, and interpretation of data. All authors read and approved the final manuscript.

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