ECRONICON OPEN ACCESS

EC DENTAL SCIENCE
Research Article

Under the Mists of COVID-19: Dietary Habit Change and Patients' Flow to Dental Clinics in KSA

Yasser Y Abdelmagid[1]*, Aya H Hussein[2], Zahra N Abu AlSaud[2], Sereen M Kalantan[2], Maram M Alras[2] and Sultana Y Sharawi[2]

[1]Assistant Professor, Restorative Dentistry Department, Al Farabi Private College for Dentistry and Nursing, Jeddah, Kingdom of Saudi Arabia

[2]Al Farabi Private College for Dentistry and Nursing, Jeddah, Kingdom of Saudi Arabia

***Corresponding Author:** Yasser Y Abdelmagid, Assistant Professor, Restorative Dentistry Department, Al Farabi Private College for Dentistry and Nursing, Jeddah, Kingdom of Saudi Arabia.

Received: January 30, 2021; **Published:** February 25, 2021

DOI: 10.31080/ECDE.2021.20.01628

Abstract

The World Health Organization declared Corona Virus 2019 (COVID 19) as a global health crisis in March 11, 2020. In the Kingdom of Saudi Arabia, the zero patient was discovered in Qatif, on the 2nd of March 2020 and hence the Saudi government took strict precautions to limit the virus spread. Quarantine was declared in March 23, 2020 and lasted till June 21, 2020; dental care was restricted to emergency services. The lifestyle of the Saudi population changed dramatically in the context of their behaviors, physical activity and dietary habits. The purpose of this study is to evaluate the dietary behavioral change, its impact on the oral health and the conditions of the dental visits throughout the pandemic crisis. A randomized cross-sectional study design will be conducted through an online questionnaire assessing 500 personnel as an initial target.

A major change in the lifestyle of the population is expected which might have a great influence on the oral health and hence the need for dental care. Meanwhile the fear and anxiety from the pandemic is supposed to jeopardize the dental demands of the population and the frequency of dental visits. As the quarantine is over, we assume that the fear from dental care relieves gradually with a gradual increase in the number and diversity of dental visits.

Keywords: *Pandemic; Quarantine; Lifestyle; Diet; Oral Health; Dental Clinics*

Abbreviations

WHO: World Health Organization; PHEIC: Public Health Emergency of International Concern; COVID-19: Coronavirus Infectious Disease; CoV: Coronaviruses; KSA: Kingdom of Saudi Arabia; ADA: American Dental Association; TMJ: Temporomandibular Joint

Introduction

During the last decade, the world has been facing different health problems that were considered as national crisis. Pandemic H1N1/09 Influenza in 2009 [1], Ebola virus epidemic in 2013-16 [2], Zika virus outbreak in 2015 [3]; all of which were defined as public health cri-sis. Since December 2019, the world has been facing a global health crisis of the contagious acute respiratory syndrome, SARS-CoV-2 [2]. On the 30th of January 2020, the World Health Organization (WHO) declared the outbreak as a Public Health Emergency of International Concern (PHEIC) [3]. On the 11th of February 2020, they renamed the novel Coronavirus as Coronavirus Infectious disease (COVID-19)

[4]. COVID-19 is an infectious disease caused by the new betacoronavirus [4]. It descends from a large family of viruses, Coronaviruses (CoV), that could cause illnesses as common cold or even severe diseases as Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) [5,6].

Several countries have validated preventive measures after the rapid worldwide spread of this virus among humans. These measures involved limiting the freedom of movement and the way of living [7]. On the 2nd of March 2020, the zero patient was discovered, and accordingly the Saudi government started massive strict precautions to limit the virus spread [5,7]. A quarantine was declared in March 23, 2020 and lasted until May 28, 2020 [9,10]. Due to this new condition, online education, smart working and limitation of outdoor activities were implemented. One of the main effects of this protocol was the closure of all health care centers, including dental clinics except for emergencies. In consequence to the lockdown, there was a dramatic change in the Saudi population's lifestyle in context of their behaviors, physical activity and dietary habits.

Materials and Methods

Survey methodology

This cross-sectional study is carried out by the dental department of Al-Farabi Dental College in Jeddah, KSA; using an electronic survey to collect data from all the regions of the kingdom. The form focused on people's lifestyle, eating habits, dental care and willingness to visit the dental clinic before and during the COVID-19 pandemic's lockdown. The survey targeting 1000 replies from within the Saudi population. The survey conduction started on 17 August 2020 and the last response was on 5 September 2020. using different online platforms that is simply accessible on any device connected to the internet. A link to the online survey was distributed among the regions via multiple applications including: WhatsApp, Twitter, Instagram, and Snapchat. This guaranteed the fastest, safest and widest distribution of the survey during the pandemic. The survey was administered in Arabic and English languages, to include the nonnative residents.

Questionnaire

A questionnaire designed by using Google Form, containing 50 items, branched into four different sections: (1) socio-demographic data (11 questions: age, gender, region, hometown, nationality marital status, educational level, occupations, smart working, health status and getting infected by COVID-19 or not); (2) anthropometrics information (2 questions: reported weight and height); (3) dietary habits and lifestyle information: (a) (12 questions regarding usual consumption of certain types of food, frequency of consumption, number of meals, and in the intake of any type of foods (b) (10 questions: weight change, sleeping hour, physical activity, smoking, grocery shopping) (4) Dental clinic flow (15 questions: pre- quarantine dental treatment, effect of quarantine on treatment follow-up phase, level of anxiety to visit the dental clinic, general level of anxiety toward quarantine and COVID-19 pandemic, daily oral health routine, negative effects on oral health during quarantine, awareness towards emergency dental visits, having sever pain that led to visiting the dentist during quarantine, other reasons for visiting the dental clinic in that period, preventive measures taken during the visit, adequacy of preventive measures in dental clinics, post-quarantine dental clinic visit safety, the willingness to dental clinic in the post quarantine period, the fear of virus transmission through the dental clinic).

Data privacy, consent of participation, and ethical approval

An informed consent was implemented in the electronic survey. Participants were assured that all the information they would provide will be only used for research purposes. The participants' answers are saved anonymously according to the confidentiality rules of Google's privacy policy. If the participants were not willing to continue the participation, the participants were able to freely stop and

leave the questionnaire at any section before submitting. Responses were only saved after pressing the "submit" button at the end of the questionnaire. Ethical approval was obtained from AlFarabi Private College Research Ethical Committee.

Statistical analysis

All the data obtained were tabulated accordingly and entered in Microsoft Excel sheets, which was subjected to analysis. Data analysis will be conducted with IBM Statistical Package for Social Sciences version 23.0 (SPSS Inc., Chicago, IL, USA). Frequencies and percentages were used mainly for presenting the categorical variables.

Results

The current study included 1000 participants (86.8% Saudi citizens and 13.2% Non-Saudi residents) from the five different regions of the kingdom. The greatest number of participants was from the Eastern region (43.7%) followed by the Western region (37.1%), the Central region (11.7%), the Southern region (5.5%), and lastly the Northern region (2.0%). The sociodemographic details of the participants based on five regions are given in table 1.

Central		Regions in Kingdom					Total
		Eastern	Northern	Southern	Western		
Nationality	Saudi	85	427	13	55	288	868
		72.6%	97.7%	65.0%	100.0%	77.6%	86.8%
	Non-Saudi	32	10	7	0	83	132
		27.4%	2.3%	35.0%	0.0%	22.4%	13.2%
Gender	Female	86	325	14	41	280	746
		73.5%	74.4%	70.0%	74.5%	75.5%	74.6%
	Male	31	112	6	14	91	254
		26.5%	25.6%	30.0%	25.5%	24.5%	25.4%
Age of the participants	< 18 years	3	9	0	1	6	19
		2.6%	2.1%	0.0%	1.8%	1.6%	1.9%
	18 - 29 years	29	137	7	30	159	362
		24.8%	31.4%	35.0%	54.5%	42.9%	36.2%
	30 - 39 years	32	91	7	14	75	219
		27.4%	20.8%	35.0%	25.5%	20.2%	21.9%
	40 - 49 years	35	55	5	8	72	175
		29.9%	12.6%	25.0%	14.5%	19.4%	17.5%
	50 - 59 years	13	105	1	2	47	168
		11.1%	24.0%	5.0%	3.6%	12.7%	16.8%
	60 - 70 years	5	40	0	0	11	56
		4.3%	9.2%	0.0%	0.0%	3.0%	5.6%
	> 70 years	0	0	0	0	1	1
		0.0%	0.0%	0.0%	0.0%	0.3%	0.1%

Marital status	Divorced	3	10	0	0	15	28
		2.6%	2.3%	0.0%	0.0%	4.0%	2.8%
	Married	79	311	14	24	219	647
		67.5%	71.2%	70.0%	43.6%	59.0%	64.7%
	Single	35	115	6	31	136	323
		29.9%	26.3%	30.0%	56.4%	36.7%	32.3%
	Widow	0	1	0	0	1	2
		0.0%	0.2%	0.0%	0.0%	0.3%	0.2%
Educational level	School	18	60	1	8	53	140
		15.4%	13.7%	5.0%	14.5%	14.3%	14.0%
	College/Bachelors	82	327	13	41	245	708
		70.1%	74.8%	65.0%	74.5%	66.0%	70.8%
	Advanced studies/ Masters/PhD	7	25	2	0	43	77
		6.0%	5.7%	10.0%	0.0%	11.6%	7.7%
	Other	10	25	4	6	30	75
		8.5%	5.7%	20.0%	10.9%	8.1%	7.5%
Occupation	Employed	61	129	8	14	150	362
		52.1%	29.5%	40.0%	25.5%	40.4%	36.2%
	Retired	7	103	1	1	18	130
		6.0%	23.6%	5.0%	1.8%	4.9%	13.0%
	Student	16	73	2	24	69	184
		13.7%	16.7%	10.0%	43.6%	18.6%	18.4%
	Unemployed	33	132	9	16	134	324
		28.2%	30.2%	45.0%	29.1%	36.1%	32.4%

Table 1: *Region wise comparison of sociodemographic characteristics.*

The analysis showed that 6.7% had reported that they were infected with COVID-19. In our sample 54.6% were employed and 45.4% were unemployed. It was observed that 20.30% of the participants were students who attended their classes online at home; while 19.8% of the participants worked from home during the lockdown. On the other hand, 15% went to work as usual and 1.6% lost their job as consequence of COVID-19 lockdown (Figure 1).

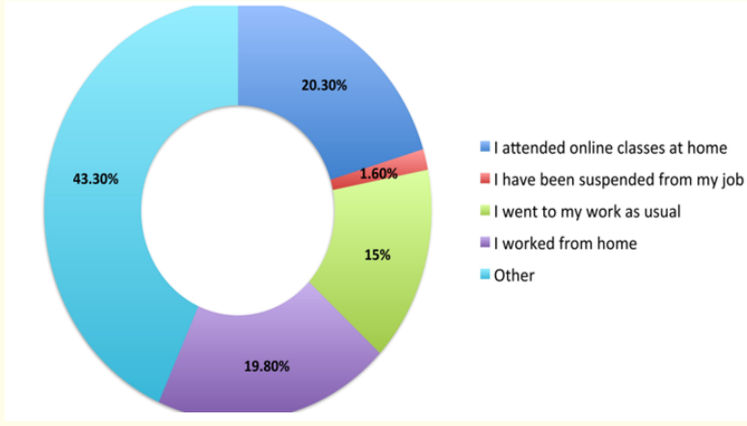

Figure 1: *Status related to work among participants.*

Lifestyle before and during the lockdown

The assessment of differences in personal habits before and during lockdown showed that smoking among participants increased from 18.7% to 26.8% during the quarantine. There was also an increase noted in the normal sleeping hours from 55.3% to 64.6%. However, there was a considerable decrease in sports activities and other physical activities from 68.5% to 37.8% (Figure 2).

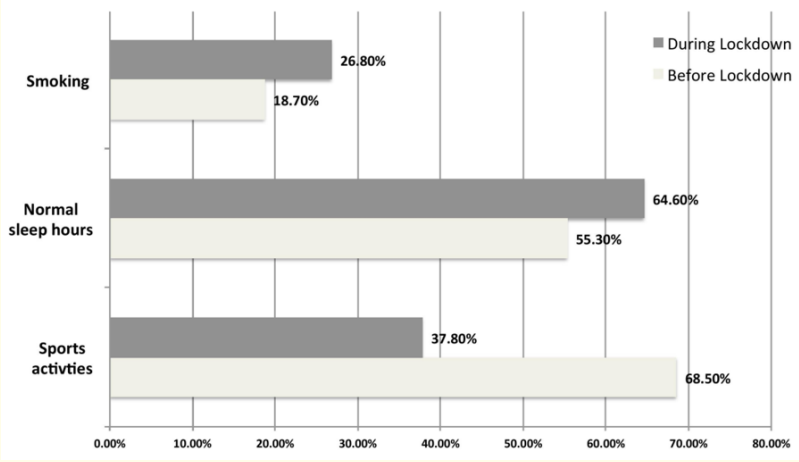

Figure 2: *Personal habits before and during lockdown.*

When we assessed the level of anxiety among the participants, it was found that 58% showed high level of anxiety on different degrees (anxious, panicked or horrified), The rest 42% showed that they were not psychologically affected by the pandemic (Figure 3).

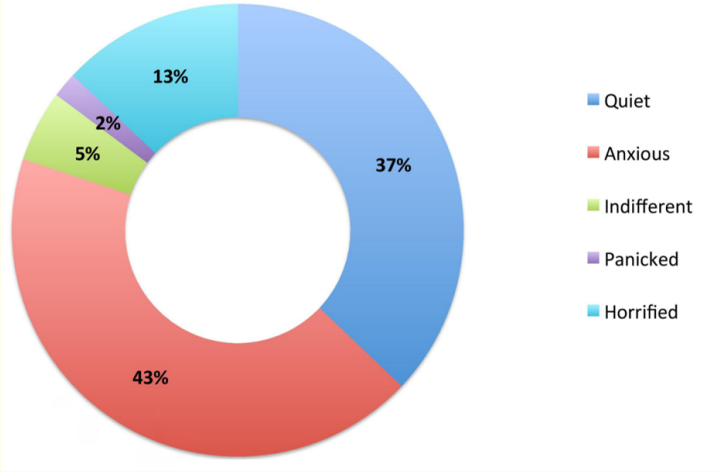

Figure 3: *Level of anxiety during the lockdown.*

Dietary habit before and during the lockdown

The analysis of the difference in consumption of different food items before and during lockdown showed that items such as fruits, vegetables, nuts, pasta and cereals, pizza or pastries, dairy products, eggs, white meat, red meat, coffee, and tea consumption decreased during the lockdown. At the same time, the consumption of items like meat, fish, legumes, sugar or sweeteners, sugary or sparkling drinks and seasoning sauces increased during lockdown (Figure 4). When we asked about the normal meals' consumption before the quarantine, 37.3% of the respondents used to eat all 3 main meals, 38.7% used to have only 2 meals, and 24% used to eat randomly. Upon assessing the number of meals consumed daily during the lockdown, 46% reported that their normal meal consumption did not change. While 21.60% had skipped 1 or more main meals, whereas 12.50% added one or more main meals to the diet, and 19.90% added 1 or more snacks between meals (Figure 5).

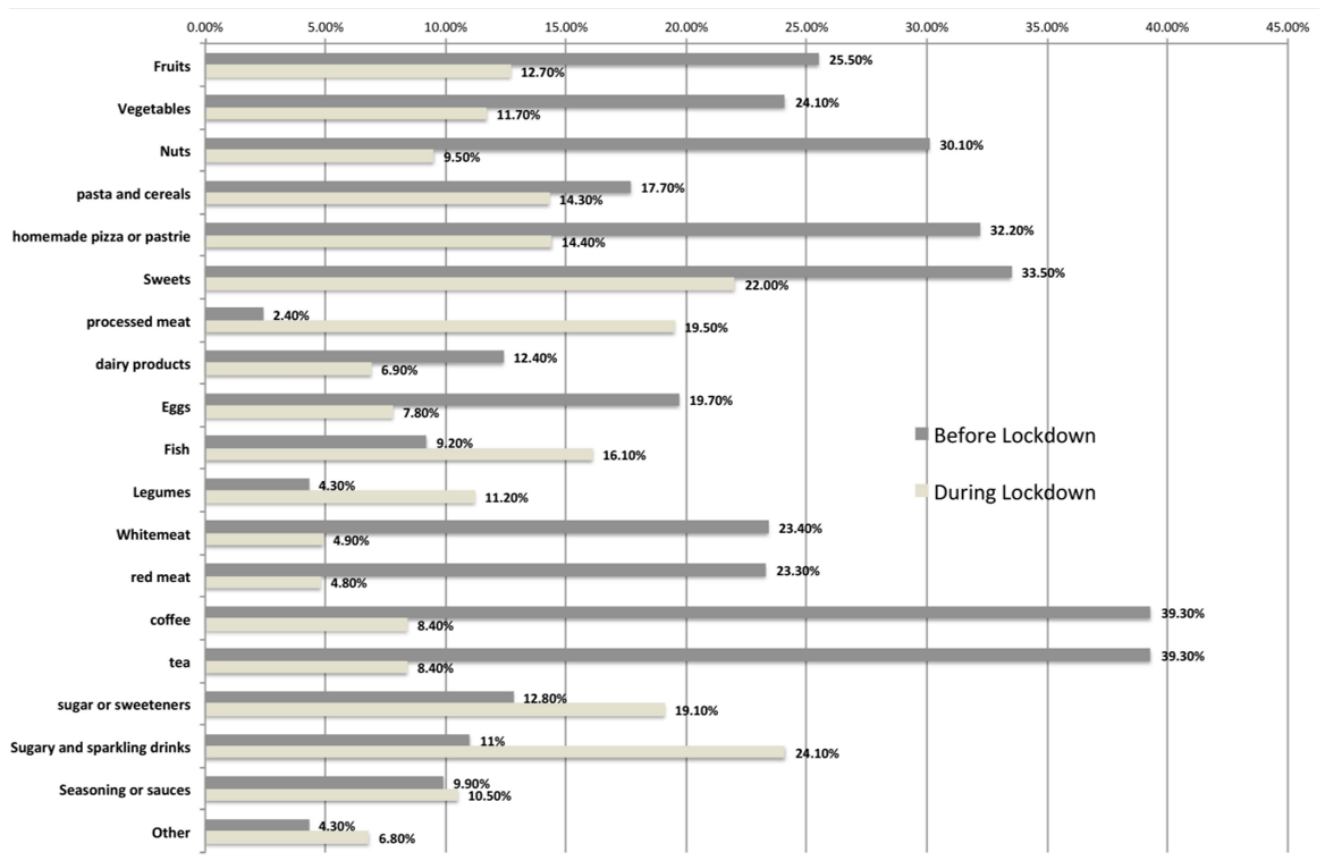

Figure 4: *Change of consumption of different food items before and during the lockdown.*

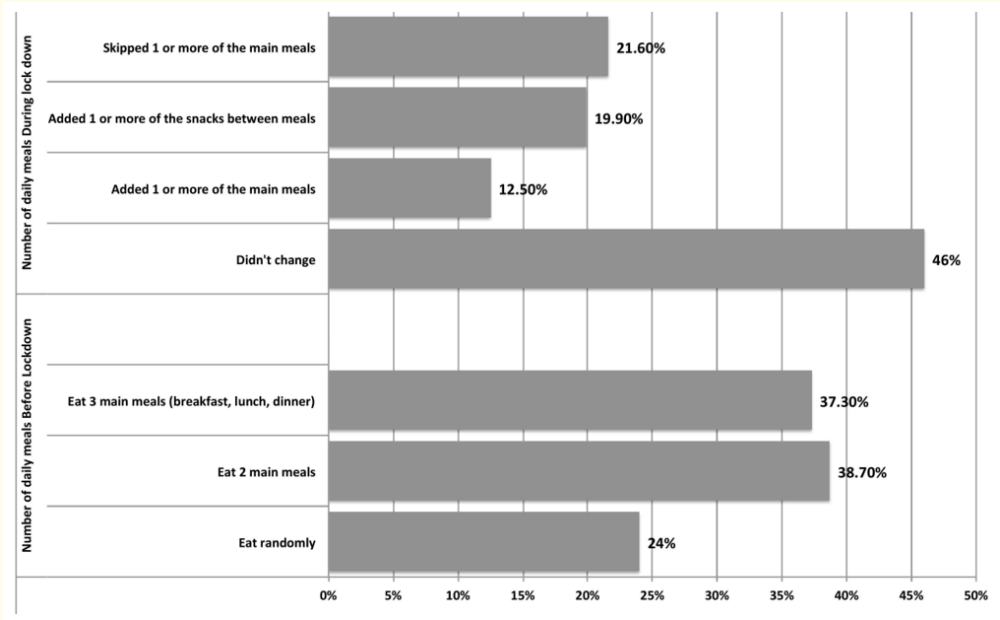

Figure 5: *Meal consumption pattern before and during the lockdown.*

Oral hygiene and willingness to visit the dental clinics

When we assessed the practices and attitudes towards dental treatment during the lockdown, it was found that 66.3% did not go for any dental treatment. Hence the rest of the participants had various dental treatments undergone before the lockdown as restorative (56.5%), orthodontic (11.9%), endodontic (15.7%), prosthodontic (16%). Regarding visiting the dental clinics during the lock down, 24.6% showed interest in completing their dental treatments. Yet, 75.4% showed no interest in visiting the dental clinics due to COVID-19 related safety concerns.

The assessment of oral hygiene practices during lockdown showed that 42.1% brushed their teeth once daily, 24.6% brushed twice daily, and the remaining 33.3% used multiple hygiene measures (brushing, flossing, and using mouthwash). When we asked about changes of oral hygiene during the quarantine, 13.8% showed a change in their attitude towards oral hygiene procedures; where 9.2% of participants have cared for their oral hygiene and 4.6% cared less than what they practiced usually before the lockdown. Regarding negative effects of the lockdown on oral health, 71.30% were not affected, while 28.7% reported some effects including: worse oral hygiene (8.70%), toothache (14%), gingival bleeding (4%) and TMJ (Temporomandibular Joint) pain (2%) (Figure 6). It was found that 60.5% had some degree of awareness of the type of dental treatment provided by dentists during the lockdown, and 39.5% were not. Only 15.5% of the participants had visited the dentist during the lockdown due to different types of emergencies including: severe tooth pain (4.4%), injury associated with broken teeth (2.4%), facial swelling (0.8%), jaw fracture (0.3%), and others (7.6%). The patients' concerns about safety and preventive measures followed in the dental clinic during the pandemic time showed that only 18.7% believed that it was adequate (Table 2). Regarding the safety of dental visits during the pandemic, 50.6% of the respondents believed that it is not safe unless there is an emergency dental care needed.

		Frequency	Percent
Type of dental treatment done in the pre-lockdown period	Restorative treatment (decay, restoration, filling)	190	19.0%
	Cosmetic treatment (whitening, veneers)	17	1.7%
	Prosthetic rehabilitation (implants, prosthesis)	23	2.3%
	Endodontic	53	5.3%
	Orthodontic	54	5.4%
	Didn't undergo any dental treatment	663	66.3%
How lockdown affected dental treatment follow-up	Not interested in following the treatment stages	99	9.9%
	Would have completed the treatment if the dental visits weren't only for emergencies.	76	7.6%
	It was necessary but the treatment was delayed	170	17.0%
	Wasn't receiving a dental treatment before	655	65.5%
Anxiety regarding visiting the dental clinic to follow a previous treatment during lockdown.	Not anxious at all	116	11.6%
	Slightly anxious	165	16.5%
	Highly anxious	203	20.3%
	Wasn't receiving a dental treatment/had no treatment to follow up	516	51.6%
Methods used for Oral hygiene practices during lockdown	Brush once	421	42.1%
	Brush twice or more	246	24.6%
	Used floss	5	0.5%
	Used mouthwash	29	2.9%
	Multiple methods	299	29.9%
Oral hygiene behavior during lock down	As usual	847	84.7%
	I do not care	15	1.5%
	Less than usual	46	4.6%
	More than usual	92	9.2%
Awareness regarding dental treatment provided during lockdown (only for emergency)	No	395	39.5%
	Yes	345	34.5%
	Somewhat aware	260	26.0%
Reasons for visiting dentist during lockdown time	Facial swelling	8	0.8%
	Injury associated with a broken tooth	24	2.4%
	Jaw fracture	3	0.3%
	Severe tooth pain	44	4.4%
	Other	76	7.6%
	Did not visit the dentist for any emergency	845	84.5%
Opinion regarding Preventive measures applied in dental clinics	Yes, adequate enough	187	18.7%
	Not adequate	83	8.3%
	Somewhat adequate	155	15.5%
	I'm not aware of the preventive measures	575	57.5%

Table 2: *Practices and attitudes related to oral hygiene and dental treatment.*

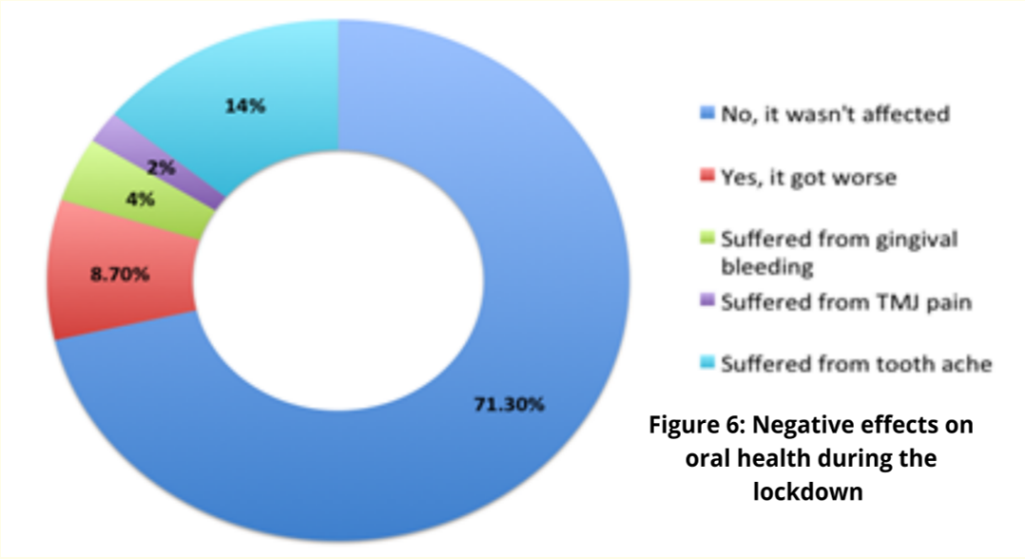

Figure 6: *Negative effects on oral health during the lockdown.*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	506	50.6%	50.6%	50.6
	Yes	494	49.4%	49.4%	100.0
	Total	1000	100.0	100.0	

Table 3: *Do you think visiting the dentist is safe in the presence of corona virus in the current period?*

		Frequency	Percent
Valid	No	193	19.3%
	Yes, for an emergency	465	46.5%
	Yes, for an emergency; No	31	3.1%
	Yes, for cosmetics	62	6.2%
	Yes, for cosmetics; No	2	0.2%
	Yes, for cosmetics; Yes, for an emergency	20	2.0%
	Yes, for cosmetics; Yes, for regular checkup	17	1.7%
	Yes, for cosmetics; Yes, for regular checkup; Yes, for an emergency	29	2.9%
	Yes, for regular checkup	117	11.7%
	Yes, for regular checkup; Yes, for an emergency	64	6.4%
	Total	1000	100.0

Table 4: *Is it possible that you would visit the dental clinic in the current period?*

Discussion

This cross-sectional study spots the light on the Saudi population's changes in eating habits, life style, along with dental health and willingness to visit the dental clinics "Under the Mist of COVID-19". The surveying period started on the 17th of August 2020 until the 5th of September 2020. As far as we know, this study is the only study that investigated different aspects of how the Saudi population's life changed during the pandemic era. Since the survey aimed to include participants from all around the kingdom and for the safety of the investigators and the participants, we conducted an online survey that was sent via different social media applications. The targeted sample was 1000 participants, divided according to the five regions of Saudi Arabia with a minimum of 2% (North of the kingdom) and a maximum of 43.7% (East of the kingdom). Female respondents were almost triple the number of male respondents.

To inspect the effect of the quarantine widely, we have managed to get responses from different age ranges starting from 18 years and above. The majority of participants (36.2%) were 18 - 29 years old. The main aim of the quarantine, as in many countries worldwide, was to increase the social distancing between people to lower the infection curve as much as possible. During the three months lockdown period, a group of the respondents had major changes in their daily life routine; as students switched from attending their classes physically into attending virtually via online class rooms. Some of the employers had to work indoors too, along with 1.60% employers who were suspended from their work. Staying indoors for such a long period of time along with following the news and not knowing when or how the pandemic will end have had negative effect on a wide range of the population. When attention is needed, humans usually flout the desire to sleep and stay awake. However, when we feel bored, an inescapable desire to sleep strikes [15]. The replies of our respondents prove that sleep quality has changed and increased by 9.3% during the quarantine. This finding coincides with Maria Casagrande., *et al*. that COVID-19 pandemic can be considered a risk factor that had an effect on sleep and could cause psychological changes [16].

As the lockdown has affected social activities, many people stopped doing their usual physical exercises. Upon surveying the sports activities, we found that the majority of the participants were involved in practicing different types of sports before the quarantine. However, during the lockdown their activity has decreased mainly due to the closure of the gyms.

Isolation could generate depression or aggravate it, especially in people who have been already infected by the virus. Along with these situations, continuously hearing or reading about the pandemic could lead to onset of stress. As well-known stress is an adaptive response of an organism to real or triggering stressors [17]. This has been shown when we asked about the level of anxiety during the lockdown, where the majority of the participants were anxious. Accordingly, we have found out the rate of smoking have increased by 8.1%.

Social isolation can induce boredom and living under stress of the unknown can also lead to considerable dietary changes. Thus, development of a likelihood for overeating especially high calorie foods, or what is known as "comfort foods" [18]. This is what we have noticed while asking about the dietary habit of the participants taking into consideration their normal food servings. When inquiring about the consumption of certain types of food, the most consumed during the quarantine were desserts, sugar and sweeteners, and sugary sparkling drinks. During the lockdown, less time was given to physical activities and there was an increase in the overall resting rate of most of the participants. Watching TV, which is the simplest way to overcome boredom, could be a significant factor in simultaneous food consumption. It is believed that the content of the TV program can lead to this effect. This proves that the emotional state promoted by TV can modulate the consumption [19]. We assume that this is one of the main factors that increased the intake of sugar in different types of food. Considering that one of the three months that the lockdown was imposed in was the Holy month of Ramadan, from the traditional habits of this month in the Arabian Peninsula is serving multiple different types desserts all through the month. Which again was another important factor leading to the increase in sugar intake.

Oral disease has some common risk factors including stress, unhealthy diet, smoking, behavioral health issues. Most if not all of these factors have been intensified during the quarantine. Thus, these factors have led to a decrease in oral health care among the Saudi population [20]. Before the lockdown, most of the respondents have been brushing their teeth only once per day, while the rest have been using multiple oral hygiene methods recommended by the ADA including brush after each meal along with using dental floss and mouthwash [21]. During the lockdown, the oral health care has not changed much as only few of the participants (9.2%) increased their caring.

One of the facilities that were affected by the quarantine were the dental clinics as they only received emergency cases. It has been proven that dental clinics is one of the highly possible places of transmission of COVID-19 due to the high number of aerosols [22]. Due to the lockdown and the strict rules upon dental clinics, 17% of our participants had their treatment put on hold. Regarding emergencies, the chief reason for visiting the clinic was seeking endodontic treatment. Giving thought that almost half of the respondents were not aware of the preventive measures applied in dental clinics throughout the quarantine, that coincides with the fact that 36% have been experiencing different levels of anxiety. Hence, half of the participants believed that it is not safe to visit the dental clinics during the pandemic. Even when the quarantine has ended, visiting the clinic for emergency treatment was the predominant answer by the participants.

Conclusion

COVID-19 pandemic has affected the whole world in different negative aspects. Some of these aspects were the eating habit, physical and psychological wellbeing. The Saudi population lifestyle has showed major disruption owing to the high level of anxiety that affected most of the population at that time. The oral health was also jeopardized, although it was not up to standard before pandemic. The dental care providers were highly affected by the lockdown and the treatments were limited to emergency cases. Hence, we assume that the Saudi population need to be exposed to a broader level of awareness through various health care campaigns. Programs explaining how to deal with crisis situations should be introduced to the population for minimizing the implication on their oral health. We believe that this study is a contribution to previous efforts in assessment of the public health in the Saudi population at the time of the pandemic; still further researches are needed to be able to affect an enhancement in this field.

Bibliography

1. Michaelis M., *et al.* "An influenza A H1N1 virus revival - pandemic H1N1/09 virus". *Infection* 37.5 (2009): 381-389.

2. Coltart Cordelia EM., *et al.* "The Ebola outbreak, 2013-2016: old lessons for new epidemics". *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences* 372.1721 (2017): 20160297.

3. Wikan N and Smith DR. "Zika virus: history of a newly emerging arbovirus". *The Lancet Infectious Diseases* 16.7 (2016): e119-e126.

4. Rabi Firas A., *et al.* "SARS-CoV-2 and Coronavirus Disease 2019: What We Know So Far". *Pathogens* 9.3 (2020): 231.

5. Alkhamees Abdulmajeed A., *et al.* "The psychological impact of COVID-19 pandemic on the general population of Saudi Arabia". *Comprehensive Psychiatry* 102 (2020): 152192.

6. "Novel Coronavirus(2019-NCoV) - WHO". World Health Organization (2020).

7. MOH News - MOH Reports First Case of Coronavirus Infection (2020).

8. Martinez-Ferran María., *et al.* "Metabolic Impacts of Confinement during the COVID-19 Pandemic Due to Modified Diet and Physical Activity Habits". *Nutrients* 12.6 (2020): 1549.

9. Custodian of the Two Holy Mosques Issues Curfew Order to Limit Spread of Novel Coronavirus from Seven in the Evening until Six in the Morning for 21 Days Starting in the Evening of Monday 23 March The Official Saudi Press Agency.

10. Al-Jadaan: Gradually Reopening Economic Activities Affirms Government's Role in Supporting Economic Development and Is A Positive Step Towards Improving Economic Performance the Official Saudi Press Agency.

11. Moynihan Andrew B., *et al.* "Eaten up by boredom: consuming food to escape awareness of the bored self". *Frontiers in Psychology* 6 (2015): 369.

12. Yılmaz Cemile and Vural Gökmen. "Neuroactive compounds in foods: Occurrence, mechanism and potential health effects". *Food Research International* 128 (2020): 108744.

13. Rodríguez-Martín Boris C and Adrian Meule. "Food craving: new contributions on its assessment, moderators, and consequences". *Frontiers in Psychology* 6.21 (2015).

14. Kharma Mohamed Yaser., *et al.* "Psychological impact of quarantine on mental and oral health: Lessons learned from previous quarantine and can be applied for current COVID-19 pandemic". *International Journal of Oral Care and Research* 8.3 (2020): 52.

15. Oishi Yo., *et al.* "Slow-wave sleep is controlled by a subset of nucleus accumbens core neurons in mice". *Nature Communications* 8.1 (2017): 734.

16. Casagrande Maria., *et al.* "The enemy who sealed the world: effects quarantine due to the COVID-19 on sleep quality, anxiety, and psychological distress in the Italian population". *Sleep Medicine* 75 (2020): 12-20.

17. Barrea Luigi., *et al.* "Does Sars-Cov-2 threaten our dreams? Effect of quarantine on sleep quality and body mass index". *Journal of Translational Medicine* 18 (2020): 1318.

18. Kumari Archana., *et al.* "A short questionnaire to assess changes in lifestyle-related behaviour during COVID 19 pandemic". *Diabetes and Metabolic Syndrome: Clinical Research and Reviews* 14.6 (2020): 1697-1701.

19. Chapman Colin D., *et al.* "Watching TV and food intake: the role of content". *PloS one* 9.7 (2014): e100602.

20. Brian Zachary and Jane A Weintraub. "Oral Health and COVID-19: Increasing the Need for Prevention and Access". *Preventing Chronic Disease* 17.E82 (2020).

21. Home Oral Care (2020).

22. Aldahlawi Salwa A and Ibtesam K Afifi. "COVID-19 in Dental Practice: Transmission Risk, Infection Control Challenge, and Clinical Implications". *The Open Dentistry Journal* 14.1 (2020): 348-354.

Volume 20 Issue 3 March 2021