



Research article

Oral healthcare-seeking behavior during the COVID-19 lockdown period: A cross-sectional study from Eastern Saudi Arabia



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ABSTRACT

Objective: To assess oral healthcare-seeking behaviors during the COVID-19 lockdown period in eastern Saudi Arabia.

Methods: A cross-sectional questionnaire-based study was conducted from October 2020 to December 2020 at Dental Clinic Complex, College of Dentistry, King Faisal University Al Ahsa, Saudi Arabia. Three hundred and sixty patients who visited the Dental Clinic Complex after relaxation of lockdown and consented to participate were included in this study. Participants were instructed to complete a questionnaire on oral health and dental care during the lockdown period, consisting of five sections.

Results: Out of 360 participants, 168 reported requiring dental help during the lockdown period; however, only 27 participants contacted a dentist to emergency advice on phone, and 102 participants visited a dentist. Most participants used toothpaste for sensitive teeth, followed by over-the-counter pain killers, and clove oil. In this regard, 72.8% of females used toothpaste for sensitive teeth. A considerable number of participants needed filling, followed by root canal treatment, denture repair, and dental extraction. Most participants were treated with pain killers, followed by antibiotics, and referral to a hospital. More than 80% of them expressed that regular visits to the dentist are beneficial.

Conclusion: A substantial proportion of participants sought oral health care during the lockdown period, mainly for restorative treatment. This was mostly achieved by visiting a dentist, or via telephone consultation to a lesser extent. Analgesics were the most common prescriptions, followed by antibiotics. Dental patients should be encouraged to regularly visit dentists to mitigate the drawbacks that lockdowns may cause in the provision of oral healthcare services.

1. Introduction

In December 2019, several cases of viral pneumonia were detected in Wuhan, Hubei, China. A novel coronavirus was recognized as the virus responsible for the infection. Initially, it was named as 2019 novel

coronavirus (2019-nCoV) and later renamed as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. Since then, the virus has spread to countries on all continents. On February 12, 2020, the World Health Organization (WHO) officially named the disease coronavirus disease 2019 (COVID-19) and on March 11 declared it a pandemic [2].

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Up until now, there have been more than 517 million COVID-19 confirmed cases and about 6.2 million deaths worldwide [3]. The most common transmission routes for COVID-19 include touching contaminated surfaces, touching the face or eyes, coughing and sneezing (from infected people), as well as through contamination from droplets and aerosol-cloud generating procedures [4, 5].

Dentistry is one profession that commonly involves procedures that generate aerosols. Therefore, among many other healthcare teams, dental teams and patients are the most vulnerable groups to SARS-CoV-2 infection [4, 5]. In this case, the risks are mainly due to the possibility of infection by inhalation of contaminated particles generated by aerosol, the handling of patient secretions, contact with contaminated surfaces, and face-to-face communication [4, 5, 6].

Although different protocols for safe dental care during the pandemic have been proposed, both patients and many dental professionals are still quite skeptical about this issue. Numerous studies have shown that dental patients and professionals are in a constant state of fear and anxiety about acquiring COVID-19 while performing dental procedures [7, 8, 9]. The impact of COVID-19 is so devastating that some dentists have closed their offices, which has disrupted dental services for many patients. Lockdowns and other restrictive measures imposed in different countries represent another challenge for patients to receive oral health care. During lockdown periods, generally, only emergency care is provided [7].

It is worth noting in this context that the prevalence of oral diseases is very high in several countries, including Saudi Arabia [10]. A few years earlier, the Saudi Health Information Survey reported that daily tooth brushing and flossing are not common among the young population and only 12% of the young population visited a dentist in the last year for routine dental check-up, while nearly half (49%) sought urgent treatment [11]. Likewise, a very high prevalence (85.6%) of dental caries was observed in young Saudi women in the west-central region of Saudi Arabia [12]. In this study, we assessed the oral healthcare-seeking behaviors during the COVID-19 lockdown period in eastern Saudi Arabia.

2. Materials and methods

A cross-sectional questionnaire-based study was conducted from October 2020 to December 2020 at Dental Clinic Complex, College of Dentistry, King Faisal University Al Ahsa, Saudi Arabia. Ethical approval for this research was obtained from the Research Ethics Committee, Deanship of Scientific Research, King Faisal University (KFU-REC/2020-10-20). Adult male or female patients aged between 18 to 70 years who visited the Dental Clinic Complex after the easing of lockdown restrictions and were willing to participate were included in this study. Patients with mental disabilities, pediatric patients and those who required emergency dental care were excluded.

The sample size was calculated using a Raosoft sample size calculator with a 5% margin of error and a 95% confidence level [13]. An estimated

sample size of 277 participants was considered adequate for the study. However, to minimize errors, the sample size obtained was 360.

The designed questionnaire was validated in two steps. First, we sent the initial draft to a group of experts in related fields to assess the adequacy of the questions. Second, the structured questionnaire was validated through a survey pilot that was distributed to a group of 20 participants. Appropriate amendments were made to develop the final questionnaire based on feedback from participants. The pilot study data were excluded in the final analysis. The reliability of the questionnaire was checked using Cronbach's alpha, and the internal consistency of the questionnaire items was found to be $\alpha = 0.704$. After obtaining written informed consent, a printed copy of the questionnaire was given to participants, who were instructed about completing it (Figure 1).

Table 1. Summary of the five sections of the questionnaire.

Sections	Information obtained
1	General information about the patient age, sex, medical conditions, and oral hygiene practices
2	Difficulties faced by patients during COVID-19 lockdown for seeking dental treatment
3	The use of auxiliary resources by patients during the COVID-19 lockdown period
4	Patients' dental care needs and medication use
5	Patients' perception of oral health care during the COVID-19 lockdown period

COVID-19: coronavirus disease 2019.

Table 2. General and health-related characteristics of study participants.

Variable	N (%) = 360(100)
Gender	
Male	224 (62.2)
Female	136 (37.8)
Age groups	
Group-1 (18–29 years)	193 (53.6)
Group-2 (30–39 years)	83 (23.1)
Group-3 (40–49 years)	68 (18.9)
Group-4 (≥50 years)	16 (4.4)
Smoking habit	
Yes	84 (23.3)
No	276 (76.7)
Parafunctional habits	
Yes	90 (25)
No	270 (75)
Have a medical condition	
Yes	108 (30)
No	252 (70)
Take any medications	
Yes	114 (31.7)
No	246 (68.3)
Have a dry mouth	
Yes	48 (13.3)
No	312 (86.7)
Registered with a dentist	
Yes	216 (60)
No	144 (40)
Visit a dentist regularly	
6 monthly	23 (6.4)
Once yearly	255 (70.8)
Every 3 years	21 (5.8)
Never	61 (16.9)
Tooth brushing frequency	
Once daily	114 (31.7)
Twice daily	192 (53.3)
More than twice	24 (6.7)
Occasionally	30 (8.3)
Have a sweet tooth	
Yes	198 (55)
No	162 (45)

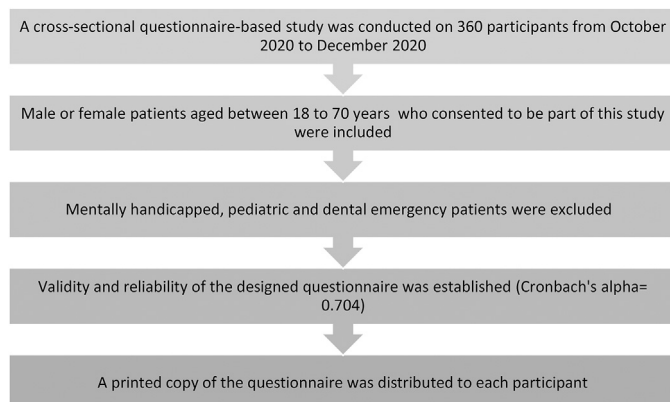


Figure 1. Flowchart showing the summary of the entire study.

The questionnaire consisted of five sections as shown in Table 1. The first section of the questionnaire was constructed to obtain general information, including patient age, sex, medical condition, and oral hygiene practice. The second section consisted of six closed-ended questions designed to assess the difficulties faced by patients during COVID-19 lockdown and how they were affected by not being able to seek dental treatment. The use of auxiliary resources by patients during the lockdown period was assessed in the third section. In the fourth section, two closed-ended questions assessed the patients' dental needs and medications prescribed by dentists during this period. Finally, we assessed patients' perception of oral health care during the lockdown period in the last section.

2.1. Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Science version 21 (SPSS Inc, Chicago, IL). The Chi-square test was applied for categorical variables. Logistic regression analysis was used to

determine the association of dependent variables with the independent variables of age, gender, and registration with a dentist. A p-value of less than 0.05 was considered statistically significant.

3. Results

Table 2 shows the frequency of general and health-related variables, including gender, age groups, smoking (cigarette/Huqa), parafunctional habits, presence of medical conditions, medication status, registration with a dentist, dentist visits, and tooth brushing frequency. In the study sample, 62% of the participants were male, 53.6% were aged 18–29 years, 23.3% were smokers, 25% had parafunctional habits, 30% had a medical condition, and 31.7% were on some medication. In addition, 60% were registered with a dentist, 70.8% reported visiting the dentist once a year, 53.3% brushed their teeth twice a day, while 55% reported having a 'sweet tooth'.

Table 3 presents a comparison of study participants' response (based on genders and age groups) to oral health-related perceptions and dental care seeking problems during COVID-19 lockdown. A

Table 3. Participants [n (%)] response to oral health-related questions during COVID-19 lockdown.

Oral health-related questions		Gender		Age groups			
		Males 224 (62.2%)	Females 136 (37.8%)	Group-1 193 (53.6%)	Group-2 83 (23.1%)	Group-3 68 (18.9%)	Group-4 16 (4.4%)
1. Have these unprecedented times been stressful for you?	• No	90 (40.2)	72 (52.9)*	89 (46.1)	27 (32.5)	40 (58.8)	6 (37.5)*
	• Yes	134 (59.8)	64 (47.1)	104 (53.9)	56 (67.5)	28 (41.2)	10 (62.5)
2. Do you think COVID-19 lockdown/dentist closures has affected your oral health?	• No	115 (51.3)	95 (69.9)***	98 (50.8)	58 (69.9)	41 (60.3)	13 (81.3)**
	• Yes	109 (48.7)	41 (30.1)	95 (49.2)	25 (30.1)	27 (39.7)	3 (18.8)
3. Has your oral health improved or deteriorated during lockdown?	• Deteriorated	36 (16.1)	6 (4.4)***	12 (6.8)	6 (7.2)	23 (33.8)	1 (6.3)***
	• Improved	63 (28.1)	21 (15.4)	60 (31.1)	8 (9.6)	15 (22.1)	1 (6.3)
	• No change	125 (55.8)	109 (80.1)	121 (62.7)	69 (83.1)	30 (44.1)	14 (87.5)
4. Did you require any dental help during lockdown?	• No	108 (48.2)	84 (61.8)***	106 (54.9)	45 (54.2)	27 (39.7)	14 (87.5)**
	• ≤3 complaints	110 (49.1)	40 (29.4)	75 (38.9)	38 (45.8)	35 (51.5)	2 (12.5)
	• ≥4 complaints	6 (2.7)	12 (8.8)	12 (6.2)	0	6 (8.8)	0
5. Did you manage to get in touch with your dentist?	• No	155 (69.2)	73 (53.7)***	126 (65.3)	46 (55.4)	42 (61.8)	14 (87.5)***
	• Emergency advice on phone	14 (6.3)	13 (11.8)	16 (8.3)	7 (8.4)	1 (1.5)	0
	• Seen in practice	55 (24.6)	47 (34.6)	51 (26.4)	30 (36.1)	25 (36.7)	2 (12.5)
6. If you were only advised over the phone, was it for?	• Nothing	162 (72.3)	120 (88.8)***	160 (82.9)	58 (69.9)	50 (73.5)	14 (87.5)***
	• Pain killers	12 (5.4)	6 (0.4)	12 (6.2)	0	5 (7.4)	1 (6.3)
	• Antibiotics	12 (5.4)	0	0	6 (7.2)	6 (8.8)	0
	• Toothpaste for sensitive teeth	18 (8.0)	6 (0.4)	12 (6.2)	12 (14.5)	0	0
	• Antiseptic mouthwash	2 (0.9)	4 (2.9)	4 (2.1)	1 (1.2)	1 (1.5)	0
	• Sent to the hospital	18 (8.0)	0	5 (2.6)	6 (7.2)	6 (8.8)	1 (6.3)
	• Other	0	0	0	0	0	0
7. Did telephonic advice help?	• No	167 (74.6)	121 (89.0)**	160 (82.9)	64 (77.1)	50 (73.5)	14 (87.5) ^{NS}
	• Yes	57 (25.4)	15 (11)	33 (17.1)	19 (22.9)	18 (26.5)	2 (12.5)
8. Did you use anything that helped you other than dentist advice? (Yes)	• Clove oil/Eucalyptus oil	40 (17.9)	14 (10.3)*	12 (6.2)	24 (28.9)	17 (25)	1 (6.3)***
	• Over the counter pain-killers	42 (18.8)	24 (17.6) ^{NS}	28 (14.5)	7 (8.4)	29 (42.6)	2 (12.5)***
	• Local anesthetic gels (e.g bonjela)	12 (5.4)	6 (4.4) ^{NS}	11 (5.7)	0	7 (10.3)	0*
	• Toothpaste for sensitive teeth	35 (15.6)	99 (72.8)**	38 (19.7)	14 (16.9)	20 (29.4)	0*
	• Anything else	15 (6.7)	15 (6.7) ^{NS}	19 (9.8)	7 (8.4)	2 (2.9)	2 (12.5) ^{NS}
9. What treatment do you think you needed? (Yes)	• New filling	101 (45.1)	7 (5.1)***	57 (29.5)	31 (37.3)	19 (27.9)	1 (6.3) ^{NS}
	• Extraction	35 (15.6)	1 (0.7)***	6 (3.1)	12 (14.5)	17 (25.0)	1 (6.3)***
	• Root canal	60 (26.8)	12 (8.8)***	38 (19.7)	12 (14.5)	21 (30.9)	1 (6.3)*
	• Denture repair	13 (5.8)	35 (25.7)***	22 (11.4)	12 (14.5)	13 (19.1)	1 (6.3) ^{NS}
10. What treatment were you provided with? (Yes)	• Pain killers	73 (32.6)	35 (25.7)***	48 (24.9)	31 (37.3)	32 (47.1)	1 (6.3)***
	• Antibiotics	42 (18.8)	6 (4.4)***	17 (8.8)	18 (21.7)	11 (16.2)	2 (12.5)*
	• Referred to hospital	19 (8.5)	11 (8.1) ^{NS}	29 (15.0)	0	0	1 (6.3)***
11. Do you think visiting the dentist regularly benefits maintenance of oral health?	• No	17 (7.6)	7 (5.1)*	10 (5.2)	6 (7.2)	8 (11.8)	0 ^{NS}
	• Yes	207 (92.4)	129 (94.9)	183 (94.8)	77 (92.2)	60 (88.2)	16 (100)

Chi-squared test: * p-value = <0.050–0.010, ** p-value = <0.010- >0.001, ***p-value = ≤0.001, ^{NS}=Non-significant. COVID-19: coronavirus disease 2019.

Table 4. Logistic regression analysis of gender, age groups, registration with a dentist, and oral health-related complaints during COVID-19 lockdown.

Dependent variables	Independent variables	Odds ratio	S.E.	Confidence interval (95%)	p-value		
Have these unprecedented times been stressful for you? (*Yes/No)	Gender	0.579	0.219	0.388-0.918	0.018		
	Age group 1	-	0.516	-	0.323		
	Age group 2	1.426	0.536	0.499-4.080	0.323		
	Age group 3	0.804	0.567	0.264-2.442	0.700		
	Age group 4	2.381	0.572	0.776-7.308	0.129		
	Registered with dentist	1.667	0.219	1.084-2.562	0.020		
Did you require any dental help during lockdown? (*Yes/No)	Gender	0.520	0.231	0.331-0.817	0.005		
	Age group 1	-	0.756	-	0.010		
	Age group 2	5.745	0.770	1.271-25.968	0.023		
	Age group 3	5.911	0.787	1.263-27.662	0.024		
	Age group 4	10.630	0.796	2.235-50.544	0.003		
	Registered with dentist	0.036	0.229	1.033-2.529	0.036		
Did you manage to get in touch with your dentist? (*Yes/No)	Gender	1.702	0.236	1.072-2.703	0.024		
	Age group 1	-	0.756	-	0.010		
	Age group 2	3.722	0.771	0.882-16.865	0.088		
	Age group 3	5.630	0.788	1.203-26.356	0.028		
	Age group 4	2.917	0.801	0.606-14.030	0.182		
	Registered with dentist	1.058	0.239	0.663-1.690	0.812		
If you were only advised over the phone (*Yes/No)	Gender	0.773	0.552	0.262-2.282	0.641		
	Age group 1	-	1.033	-	0.009		
	Age group 2	1.006	1.075	0.122-8.268	0.996		
	Age group 3	-	-	-	0.997		
	Age group 4	0.840	1.132	0.091-7.731	0.878		
	Registered with dentist	3.319	0.525	1.186-9.287	0.022		
Did telephonic advice help? (*Yes/No)	Gender	2.759	0.321	1.470-5.179	0.002		
	Age group 1	-	0.756	-	0.010		
	Age group 2	0.693	0.780	0.150-3.193	0.638		
	Age group 3	0.481	0.800	0.100-2.307	0.360		
	Age group 4	0.397	0.804	0.082-1.920	0.251		
	Registered with dentist	0.858	0.288	0.488-1.510	0.595		
Did you use anything that helped you other than dentist advice? (*Yes/No)	Clove oil	Age group 1	-	1.033	-	0.009	
		Age group 2	0.672	1.075	0.121-8.177	0.996	
		Age group 3	6.102	1.061	0.763-48.798	0.088	
		Age group 4	5.000	1.070	0.614-40.722	0.133	
		Registered with dentist	3.123	0.326	1.647-5.921	≤0.001	
		Pain killers	Age group 1	-	0.756	-	0.010
	Age group 2		1.188	0.783	0.256-5.512	0.826	
	Age group 3		0.645	0.853	0.121-3.431	0.607	
	Age group 4		5.205	0.795	1.096-24.711	0.038	
	Registered with dentist		1.945	0.291	1.099-3.434	0.022	
	Toothpaste for sensitive teeth		Gender	0.460	0.279	0.266-0.794	0.005
What treatment do you think you needed?	New filling	Gender	20.280	0.422	8.869-46.372	≤0.001	
		Registered with dentist	0.430	0.280	0.248-0.745	0.003	
	Extraction	Gender	18.088	1.030	2.400-136.321	0.005	
		Age group 1	-	1.033	-	0.009	
		Age group 2	0.484	1.113	0.054-4.263	0.511	
		Age group 3	2.535	1.079	0.306-21.00	0.389	
		Age group 4	5.000	1.070	0.614-40.72	0.133	
	Root canal	Gender	4.880	0.350	2.458-9.691	≤0.001	
		Registered with dentist	0.291	0.323	0.643-1.180	≤0.001	
	Denture repair	Gender	0.176	0.363	0.086-0.359	≤0.001	
	What treatment were you provided with?	Antibiotics	Gender	5.330	0.461	2.161-13.151	≤0.001
		Referred to hospital	Age group 1	-	-	-	0.835
Age group 2			0.377	1.052	0.48-2.965	0.354	
Age group 3			-	-	-	-	
Age group 4			-	-	-	-	
Do you think COVID-19 lockdown/ dentist closures have affected your oral health? (*Yes/No)	Gender	2.902	0.245	1.796-4.699	≤0.001		
	Age group 1	-	0.641	-	0.022		
	Age group 2	4.201	0.656	1.160-15.210	0.029		
	Age group 3	1.868	0.864	0.489-7.134	0.361		
	Age group 4	2.854	0.687	0.743-10.965	0.127		
	Registered with dentist	0.501	0.239	0.314-0.801	0.004		

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Table 4 (continued)

Dependent variables	Independent variables	Odds ratio	S.E.	Confidence interval (95%)	p-value
Has your oral health improved or deteriorated during lockdown? (Deteriorated)	Gender	4.475	0.493	1.702-11.762	0.002
	Age group 1	-	1.035	-	0.011
	Age group 2	1.388	1.078	0.168-11.495	0.761
	Age group 3	1.217	1.119	0.136-10.917	0.860
	Age group 4	10.733	1.072	1.314-87.669	0.027
Do you think visiting the dentist regularly benefits maintenance of oral health? (*Yes/No)	Registered with dentist	0.207	0.497	0.078-0.547	0.002

*reference value.

COVID-19: coronavirus disease 2019.

S.E.: Standard error.

significant percentage of males (59.8%) and age group 2 participants (67.5%) felt that the lockdown period was stressful. 51.8% of males and age group 3 participants (60.3%) needed more dental care. On the other hand, females (34.6%) and age group 3 participants (36.7%) had more contact with the dentist. 27.7% of men and 26.5% of age group 3 participants were advised to have some treatment over the phone, while 25.4% of men, 11% of women, and a small percentage $\leq 26.5\%$ of participants in all age groups reported that telephone advice was helpful. Most participants used toothpaste for sensitive teeth, followed by over-the-counter pain killers, and clove oil. In this regard, 72.8% of females used toothpaste for sensitive teeth. A considerable number of participants needed filling, followed by root canal treatment, denture repair, and dental extraction. Most participants were treated with pain killers, followed by antibiotics, and referral to a hospital. Many of them did not agree that COVID-19 affected their oral health, while more than 80% responded that regular visits to the dentist are beneficial.

Table 4 shows the associations of one of the dependent variables (oral health complaints) with the independent variables (gender, age group, and registration with a dentist). Males had significantly more stress than females and those who were not registered with a dentist. Males and unregistered participants needed more dental care during COVID-19 lockdown. A significant number of participants registered with a dentist received telephone counseling. Among the total number of participants, a greater number of males and non-registered participants reported the need for a filling, while males and age group 3 participants for tooth extraction, and males and non-registered participants for root canal treatment. A higher percentage of males, age group 1, and non-registered participants felt that COVID-19 lockdown affected their oral health, while more men and age group 3 participants felt that their health deteriorated during the lockdown period. Most participants responded that regular visits to the dentist bring benefits in maintaining oral health.

4. Discussion

The COVID-19 pandemic has seriously impacted the number of patients who have sought dental care worldwide [14, 15]. Multiple factors may be linked to the decreasing number of dental patients as well as changes in treatments.

In this context, the COVID-19 spread is primarily associated with the generation of aerosols, which are unavoidable with most dental procedures [16, 17, 18]. Furthermore, the dissemination of knowledge about the risks of SARS-CoV-2 infection (due to aerosol generation during such procedures) has caused a lot of fear among patients. Likewise, strict social distancing measures imposed by various governments and health authorities have also caused a reduction in the number of patients who visit dental clinics or hospitals (for treatment of diseases other than COVID-19) [7, 17]. Our results highlight various aspects of the dental care provided to patients during COVID-19 lockdown and other issues, including accessibility options, such as teledentistry.

During pandemic situations, the psychological reactions of a population play a vital role with impacts related to both the disease spread and emotional distress. However, despite this reality, fewer resources are often spent on populations' mental health and well-being [18]. The present study's findings demonstrate that stress was observed among people of all age groups during the lockdown period, specifically in age group 2 participants and men. In this connection, psychological and psychiatric needs should not be neglected, especially during the peaks of COVID-19 outbreaks. This practice may have a positive impact on the entire population, resulting in better outbreak management.

Our study also shows that more male patients sought dental treatments during the lockdown period than female patients. This finding corroborates the results of a previous study [19], which reflects that women are more apprehensive about respiratory infections that can be acquired during dental procedures than men [20]. However, this finding is not a consensus in the literature [14]. Even so, the reduction in the number of patients seeking dental treatment due to fear of SARS-CoV-2 infection cannot be disregarded, as this can result in deterioration of oral health. Moreover, the ongoing situation must be carefully monitored, as it can lead to a drastic increase in the need for dental services, since the number of people with COVID-19 decreases considerably.

In the current scenario, teledentistry has played a vital role in helping people with dental problems during the lockdown period of the pandemic. Its use involves information technology and telecommunication to facilitate the access of patients with dental problems to dental care through virtual consultations via Zoom, Webex, or Microsoft Teams [21]. A global survey among dental professionals during the COVID-19 pandemic reported that dentists showed a positive attitude towards the application of teledentistry and considered it useful, safe and cost effective [22]. Given that the routine use of this tool was new on a global level, the percentage of people who were able to access teledentistry services was not high in our study. However, we found that its use was beneficial to patients treated remotely. One of the likely reasons for the low use of teledentistry may be related to the use of over-the-counter medications by patients to treat dental problems. Studies conducted in various parts of the world have demonstrated a substantial use of home remedies and medications available over-the-counter for dental pain management [23]. Similar trends were observed in the present study, in which a significant percentage of participants used self-medication. Teledentistry is set to continue to expand, especially to remote or rural areas where access to specialist oral healthcare services is difficult [24] and there is also a urgent need to integrate dental software with teledentistry to make patient data management less troublesome [25, 26].

Overall, all non-urgency dental treatments were stopped immediately worldwide during the lockdown period, and an essential portion of patients was treated remotely by telephone, with prescription of analgesics and antimicrobials when needed. Only serious and/or urgent cases were treated through face-to-face consultation, minimizing the generation of aerosols in required treatments [27].

According to our findings, the dental needs of patients during COVID-19 lockdown included filling, root canal treatment, denture repair, and

extraction. Given the COVID-19 scenario and the procedures that generate aerosols, fillings and root canal treatments were especially avoided because of the higher risks of virus transmission [27]. Most participants expressed an intention to fill the teeth rather than extract them. However, in several of these cases, they were advised to take pain killers or antibiotics.

On the other hand, it should be noted that most participants were not affected by oral health problems during the lockdown period, which may be related to the fact that routine dental examinations and performing effective oral hygiene reached an excellent preventive effect [28, 29, 30]. In general, we believe that people are now more conscious and aware of their oral health, which may be one of the reasons we find individuals reluctant to undergo tooth extraction.

In this study, the effect of the COVID-19 pandemic on dental care and how people have managed their dental concerns during the lockdown period were assessed using a well-designed, validated, and reliable questionnaire. However, the findings of the current study must be seen considering some limitations. First, the sample size of the study was small, so it may not represent a larger population. Second, the study was conducted in eastern Saudi Arabia, therefore its results are not generalizable. Lastly, we could not conclude a cause–effect relationship due to the cross-sectional nature of the study design.

Further investigations will be needed to assess the effects of COVID-19 on dental care and access of patients to dentists after this pandemic period.

5. Conclusions

A substantial proportion of participants sought oral health care during the lockdown period, mainly for restorative treatment. This was mostly achieved by visiting a dentist, or via telephone consultation to a lesser extent. Analgesics were the most common prescriptions, followed by antibiotics. Dental patients should be encouraged to regularly visit dentists to mitigate the drawbacks that lockdowns may cause in the provision of oral healthcare services.

Declarations

Author contribution statement

Azeem Ul Yaqin Syed, Muhammad Adeel Ahmed, Marcos Roberto Tovani-Palone, Mian Salman Aziz, Rizwan Jouhar: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Nausheen Aga, Syed Akhtar Hussain Bokhari, Mahmoud Al Abdulsalam, Sehr Khan, Anand Marya: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

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The authors declare no conflict of interest.

Additional information

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