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Dental patients' attitudes and behaviors towards and knowledge and fear of COVID-19

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Abstract

COVID-19 is a pandemic that threatens public health worldwide. Dentists working at great risk play an essential role in protecting public health against coronavirus. This study aimed to evaluate the dental patients' attitudes and behaviors towards and knowledge and fear of COVID-19. We conducted a self-report questionnaire-based survey from 10.26.2020 to 01.12.2021 and included 1110 dental patients who applied at the Department of Dentomaxillofacial Radiology of Istanbul Medipol University Dental School. We divided the survey into four divisions: 1) Patient's knowledge about COVID-19, 2) attitudes, 3) behavior, 4) patient's fear of COVID-19. We calculated the Cronbach's alpha coefficient for the reliability of the COVID-19 Fear scale and evaluated significance at the $p < 0.05$ level. 84.6% of the participants believed that COVID-19 could be transmitted by aerosol. 94.1% of the participants considered COVID-19 a risk for their health and 93.3% that their social life was affected. 46.3% only wanted to have emergency dental treatment and postpone their dental care, and only 7% applied to the clinic for the aesthetic process. Women had a higher fear level of COVID-19 than men. We found the knowledge, attitudes, and behaviors of the patients who applied to the dentomaxillofacial radiology positive towards COVID-19. Dental health professionals should take extra measures in dental clinics to prevent the spread of COVID-19, and more efforts should be made to improve public knowledge, attitude, and behavior.

Keywords: Covid-19, knowledge, attitude, behavior, fear

1. Introduction

Human coronavirus belongs to the Coronaviridae family, and this virus is composed of big, single, plus-stranded RNA as its genome (1-3). Coronaviruses are spheric construction and have spiked glycoprotein on their surface that makes them appear like a crown, the reason for their name corona (3). The first human coronavirus (HCoV) was observed in the mid-1960s (4). The novel human coronavirus, recently named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), responsible now for coronavirus disease 2019 (COVID-19) cases in the whole world, arose in Wuhan, Hubei Province, China, on December 12, 2019. On March 11, 2020, the World Health Organization (WHO) announced the virus' spread across the globe as a pandemic (2-5). This is the third infection outbreak due to a coronavirus in less than 20 years. The severe acute respiratory syndrome (SARS) outbreak in 2002-2003 resulted in more than 8000 cases in 26 countries and had a mortality rate of approximately 10%, while the Middle East respiratory syndrome (MERS) outbreak spread to 27 countries and had a 34% mortality rate (6). The first COVID-19 case in Turkey was detected on March 11, 2020, by the Turkish Ministry of Health (7), while the first death due to the virus was reported on March 15, 2020 (8).

SARS-CoV-2 was considered to have a zoonotic route of transmission, which can spread from animals to humans, such as SARS-CoV and the MERS-CoV. (9, 10) Nonetheless, the SARS-CoV-2 is transmitted from human to human via droplet transmission and direct contact with oral, nasal, and eye mucous membranes (11-13). Several investigations have shown that human coronaviruses can remain viable on various inanimate surfaces from 2 hours to up to 9 days (1, 14, 15).

SARS-CoV-2 has an incubation period of 1 to 14 days (5 to 6 days on average). Primary symptoms are fever, cough, myalgia or fatigue. Abnormal chest computed tomography (CT) most showed bilateral pneumonia, with ground-glass opacity and bilateral patchy shadows image, and severe respiratory distress. Less prevalent symptoms are sputum production, headache, hemoptysis, and diarrhea (1, 9, 15, 16). Recent studies reported that loss of taste and smell could be the first and only signs of COVID-19 (11).

Dentists and dental assistants are in the highest risk group among all health care professionals, as they are in close contact with patients and exposed to spatter of patients' secretions/coughing/sneezing during dental treatment, droplets, aerosols, and saliva. Droplets and aerosols are the most important routes of transmission in dental procedures (1, 2, 6, 13, 17). Thus, dental offices may be the relevant hotspot for virus transmission, putting health professionals at high

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risk for COVID-19 infection and patients at risk for nosocomial infection (13). Besides, hand washing is of great importance for dental practices, as the fecal-oral transmission of COVID-19 has also been reported (10, 17). The use of high-speed handpiece and sonic/ultrasonic devices, and airflow instruments in the oral cavity creates significant amounts of droplets and aerosols that remain suspended in the air for up to 30 minutes before their deposition on surfaces or being sucked into the air conditioning system, due to their small size (17, 18). Dentistry practices include various biosafety precautions and recommendations due to the high risk of contamination during dental care. Dental procedures were limited to urgencies and emergencies or postponed in many countries (4, 12, 19). So, Meng et al. (18) were the first to report on personal protection equipment (PPE) that protected dental professionals in the course of the COVID-19 outbreak in Wuhan, China (1-3, 6, 18, 20, 21).

The diagnosis of COVID-19 can be based on the combination of epidemiologic information (e.g., a history of travel to or residence in affected region 14 days before symptom onset), clinical symptoms, CT imaging findings, and laboratory tests (e.g., reverse transcriptase-polymerase chain reaction [RT-PCR] tests on respiratory tract specimens) according to standards of the WHO (1, 14-18, 21, 22).

Researchers are conducting many studies on the diagnosis and treatment of COVID-19 worldwide. This outbreak creates serious problems for people's mental health, such as fear and anxiety (8,19,22-24). Hence, there is a need for an assessment tool to reveal the effects of COVID-19 on mental health. For this reason, Ahorsu et al. (24) improved a valid and reliable questionnaire to assess the fear of COVID-19 (8, 19, 24). Ladikli et al. (8) showed that the Turkish version of this fear scale is reliable and valid for the Turkish population (8).

The present study aimed to evaluate the attitudes and behaviors towards and knowledge (ABK) and fear of COVID-19 among patients who applied for dental care during the pandemic.

2. Materials and methods

The Ethics Research Committee approved this study of the Istanbul Medipol University (10840098-772.02-E.61626). This study utilized a self-report questionnaire-based survey. In the beginning, 100 patients participated in the survey for the pilot study who applied at the Istanbul Medipol University Dental School, Department of Dentomaxillofacial Radiology. We revised the questionnaire to ensure suitability, validity, and answers' practicability. We conducted a questionnaire study on 1110 patients who applied to the Dentomaxillofacial Radiology Department. The study took place from October 26, 2020, to January 12, 2021. After signing the consent form, the participants received the questionnaires consisting of 31 questions. We divided the survey into four divisions: 1) patient's knowledge (8 questions), 2) patient's attitudes (5 questions), 3) patient's behaviors (6 questions), and 4) patient's fear of COVID-19 (7 questions) and sociodemographic characteristics (5 questions).

2.1. Statistical Analysis

We evaluated the findings using IBM SPSS Statistics 22 for statistical analysis (SPSS IBM, Turkey) and the suitability of the parameters to the normal distribution by the Kolmogorov-Smirnov and Shapiro Wilks tests. We found that the parameters did not show a normal distribution. We evaluated the study data using descriptive statistical methods (mean, standard deviation, frequency) and the Kruskal Wallis and Mann Whitney U tests to compare the quantitative data. We compared the qualitative data using the Chi-Square, Fisher's Exact Chi-Square, Fisher Freeman Halton tests, and Continuity (Yates) Correction. We calculated the Cronbach's alpha coefficient for the reliability of the COVID-19 Fear scale and evaluated significance at the $p < 0.05$ level.

3. Results

We conducted the study with 1110 people ranging in age from 18 to 82. The average age was 35.38 ± 12.40 years. While 117 (10.5%) people had COVID-19, 993 (89.5%) did not (Table 1).

Table 1. shows the distribution of the sociodemographic characteristics of the patients

		n	%
Gender	Male	487	43.9
	Female	623	56.1
Age	18-30	432	38.9
	30-45	410	36.9
	45-60	221	19.9
	60+	47	4.2
Job	Student	188	16.9
	Unemployed	143	12.9
	Officer	190	
	Technical profession	300	27.0
	Physician	3	
	Army / police	26	
	Housewife	209	0.3
	Medical staff	51	17.1
Education status	Primary School	254	22.9
	High school	334	30.1
	University and above	522	47.0

The participants indicated their level of agreement using a five-item Likert-type scale. Answers included "strongly disagree," "disagree," "neither agree nor disagree," "agree," and "strongly agree". The minimum score possible for each question was 1, and the maximum was 5. We calculated the total score by adding up each item score. The higher the score, the greater the fear of COVID-19 (24). Table 2 shows the distributions of the answers given to the COVID-19 fear scale questions. The Cronbach's alpha coefficient of the scale was 0.873. The COVID-19 fear score ranged from 7 to 35, with an average of 16.46 ± 7.11 and a median score of 16.

Table 2. Distribution of answers to Fear of Coronavirus-19 scale questions

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
	n (%)	n (%)	n (%)	n (%)	n (%)
I am most afraid of coronavirus-19.	116 (25.8%)	59 (13.1%)	60 (13.3%)	95 (21.1%)	120 (26.7%)
It makes me uncomfortable to think about coronavirus-19.	121 (26.9%)	58 (12.9%)	46 (10.2%)	107 (23.8%)	118 (26.2%)
My hands become clammy when I think about coronavirus-19.	245 (54.4%)	106 (23.6%)	52 (11.6%)	25 (5.6%)	22 (4.9%)
I am afraid of losing my life because of coronavirus-19.	179 (39.8%)	75 (16.7%)	62 (13.8%)	72 (16%)	62 (13.8%)
When watching news and stories about coronavirus-19 on social media, I become nervous or anxious.	150 (33.3%)	74 (16.4%)	74 (16.4%)	96 (21.3%)	56 (12.4%)
I cannot sleep because I am worried about getting coronavirus-19.	274 (60.9%)	98 (21.8%)	45 (%10)	20 (4.4%)	13 (2.9%)
My heart races or palpitates when I think about getting coronavirus-19.	284 (63.1%)	90 (%20)	38 (8.4%)	17 (3.8%)	21 (4.7%)

"COVID-19 can be spread by aerosol (water particles in the air) created during dental treatment." 84.6% of the participants answered yes to his proposition. 100% of the participants have heard of the COVID-19. While the first source that 60.3% heard about the virus was television, 21.7% heard it from the internet, 13.8% from social media sites, 2.8% from the people around, and 1.4% from newspapers.

When asked about "the name of the disease that caused the new COVID-19 pandemic", 88.8% said COVID-19, 1.8% new corona and 0.8% CDC-19, while 9.1% did not know.

When asked about "the place where the first COVID-19 case was detected", 92.1% answered Wuhan.

68.8%, 27.5%, 3%, and 0.7% said COVID-19 would be transmitted from person to person, from person to person and from animal to person, from animal to human, and in different ways, respectively.

When asked about the expected symptoms of COVID-19, 74.5% said fever and cough, 55.1% difficulty breathing, 18.7% pneumonia, 10.3% abdominal pain, 0.9% heart attack, and 23.5% did not know.

When asked about the "ways of spreading COVID-19", 80.5% replied respiratory droplets, 30.3% cold-cold, 3.8% undercooked meat products, 2.9% pets, 1.3% leafy vegetables, and 14.9% all of the above (Table 3).

When asked about the "protection measures against COVID-19", 10.1% answered mouth mask, 5.2% physical distance, 3.4% hygiene, 88.9% all, and 0.5% none.

94.1% of the participants considered COVID-19 a health risk. 6.6% were afraid of consuming meat and meat products due to coronavirus. 93.3% believed COVID-19 affected social life.

When asked whether COVID-19 negatively affected the decision to undergo dental treatment, 46.3%,39.9%, and 13.8% chose the option "It is affected; I only had emergency dental treatments", "It did not affect me; I am getting my dental treatment", and "Affected, I am delaying my dental treatment", respectively (Table 4).

10.5% of the participants had COVID-19. When asked about the tests applied for diagnosis, 212 people answered; 89.2% had swab samples, 22.6% computed tomography, 23.6% blood test and 3.8% clinical findings.

While 0.6% of the participants had been abroad in the last 14 days, 13.5% of them had people diagnosed with COVID-19 in their immediate vicinity in the last 14 days.

When asked about what they cared about when applying to the dentist during the pandemic period, 83.4%, 78%, 77.8%, and 75.6% chose social distance from other patients in the waiting room, dentists using a disposable apron changed for each patient, to have disinfectants for the use of patients in the patient admission area, and dentists changing N95 surgical mask for each patient, respectively.

48.7% of the participants went to the dental hospital for restorative treatment, 23.2% gingival treatment (tartar removal), 19% endodontic treatment (root canal treatment), 18.3% Surgical treatment (tooth extraction), 14.8% Prosthetic treatment (implant, prosthesis), 11.4% Orthodontic treatment (braces treatment) and 7% aesthetic treatment (teeth whitening) (Table 5).

Women's mean COVID-19 fear score was statistically significantly higher than men's ($p: 0.001$; $p < 0.05$).

There was no statistically significant difference between age groups, occupational groups or education levels regarding COVID-19 fear scores ($p > 0.05$) (Table 6).

Table 3. Distribution of answers given to knowledge questions

		n	%
COVID-19 can be spread by aerosol (water particles in the air) created during dental treatment.	Yes	939	84.6
	No	171	15.4
Heard about the coronavirus	Yes	1110	100
The first source of coronavirus heard	Newspaper	16	1.4
	Television	669	60.3
	Internet	241	21.7
	Social media sites	153	13.8
	People around me	31	2.8
Where the first COVID-19 case was detected	Wuwei	4	0.4
	Xining	3	0.3
	Wuhan	1022	92.1
	Dingxi	5	0.5
	I do not know	76	6.8
COVID-19 transmission route	From animal to person	33	3.0
	From person to person	764	68.8
	All of the above	305	27.5
	None of the above	8	0.7
Symptoms of COVID-19	Fever and cough	827	74.5
	Heart attack	10	0.9
	Abdominal pain	114	10.3
	Pneumonia	208	18.7
	Difficulty breathing	612	55.1
	All of the above	262	23.6
Ways of COVID-19 spread	Leafy vegetables	14	1.3
	Undercooked meat products	42	3.8
	Pets	32	2.9
	Respiratory droplets	893	80.5
	Cold, common cold	336	30.3
	All of the above	165	14.9

Table 4. Distribution of the answers given to the attitude questions

		n	%
Protection measures against COVID-19	Mouth mask	112	10.1
	Physical distance	58	5.2
	Hygiene	38	3.4
	All of the above	**987**	**88.9**
	None of the above	6	0.5
COVID-19 is a health risk	Yes	1044	94.1
	No	66	5.9
Avoiding consumption of meat and meat products due to coronavirus	Yes	73	6.6
	No	1037	93.4
COVID-19 has an impact on social life	Yes	1036	93.3
	No	74	6.7
The negative impact of COVID-19 on the decision to undergo dental treatment	It did not affect me; I am getting my dental treatment	443	39.9
	Affected, I am delaying my dental treatment	153	13.8
	It is affected; I only had emergency dental treatments	514	46.3

Table 5. Distribution of responses given to behavior questions

		n	%
Having COVID-19 disease	Yes	117	10.5
	No	993	89.5
Tests for diagnosis (n=212)	Swab sample (PCR)	189	89.2
	Computed Tomography	48	22.6
	Blood test	50	23.6
	Clinical findings	8	3.8
Being abroad in the last 14 days	Yes	7	0.6
	No	1103	99.4
A person diagnosed with COVID-19 in the immediate environment in the last 14 days	Yes	150	13.5
	No	960	86.5
Important points when applying to the dentist during the pandemic period	The dentist's use of disposable gowns changed for each patient	866	78.0
	The dentist's use of N95 surgical masks changed for each patient	839	75.6
	Social distance with other patients in the waiting room	926	83.4
	Keeping a disinfectant material for the use of patients in the patient admission area	864	77.8
Reason for visiting the dental hospital for treatment	Orthodontic treatment (braces treatment)	126	11.4
	Restorative treatment (tooth decay, fillings)	541	48.7
	Endodontic treatment (root canal treatment)	211	19.0
	Aesthetic treatment (teeth whitening)	78	7.0
	Prosthetic treatment (implant, prosthesis)	164	14.8
	Periodontal treatment (tartar removal)	258	23.2
	Surgical treatment (tooth extraction)	203	18.3

Table 6. Evaluation of COVID-19 Fear score according to demographic characteristic

		COVID-19 Fear Score				
		N	Aver±SS	Median	p	
Age	18-30	186	16.77±7.16	16	10.253	
	30-45	153	16.14±6.63	16		
	45-60	93	15.82±7.48	15		
	60+	18	19.33±8.22	20.5		
Gender	Male	197	15.12±6.48	15	20.001*	
	Female	253	17.51±7.41	17		
Job	Student	86	16.12±6.43	15,5	10.111	
	Housewife/Unemployed	155	17.45±7.62	17		
	Officer	79	17.05±7.54	16		
	Technical profession	104	15.36±6.4	15		
	Medical staff / Physician	26	14.38±6.8	11.5		
Education status	Primary School	109	15.82±7.57	16	10.432	
	High school	135	16.4±7.16	16		
	University and above	206	16.84±6.83	16		

There was a statistically significant difference between the sources men and women first heard about COVID-19 (p: 0.001; p <0.05). While the rate of men hearing from the internet (27.3%) was higher than women (17.3%), that of women learning from TV (64.5%) was significantly higher than men (54.8%).

Men gave the Wuhan correct answer for where the first COVID-19 case was detected (94.3%) significantly higher than women (90.4%) (p: 0.010; p <0.05).

The ratio of women who chose from person to person as the transmission route of COVID-19 (74.5%) was significantly higher than men (61.6%) (p: 0.001; p <0.05).

Abdominal pain in women (11.9%) for symptoms of COVID-19 was significantly higher than men (8.2%) (p: 0.046; p <0.05). There was no statistically significant difference between the responses of men and women to other COVID-19 symptoms (p >0.05).

The rate of men calling the COVID-19 transmission routes as pets (4.1%) was significantly higher than that of women (1.9%) (p:0.048; p<0.05). There was no statistically significant difference between the responses of men and women to other COVID-19 transmission routes (p>0.05).

There was no statistically significant difference between the responses of men and women to other COVID-19 information questions (p >0.05) (Table 7).

There was also no statistically significant difference between the genders in terms of the answers given to the attitude questions (p >0.05) (Table 8).

Table 7. Evaluation of answers given to knowledge questions according to gender

		n (%)	n (%)	p
COVID-19 can be spread by the aerosol generated during dental treatment.	Yes	403 (82.8%)	536 (86%)	[1]0.133
	No	84 (17.2%)	87 (14%)	
The first source of coronavirus heard	Newspaper	9 (1.8%)	7 (1.1%)	[1]0.001*
	TV	267 (54.8%)	402 (64.5%)	
	Internet	133 (27.3%)	108 (17.3%)	
	Social media sites	65 (13.3%)	88 (14.1%)	
	People around me	13 (2.7%)	18 (2.9%)	
The name of the disease that caused the new coronavirus outbreak	New Corona	9 (1.8%)	5 (0.8%)	[1]0.069
	CDC-19	2 (0.4%)	7 (1.1%)	
	COVID-19	440 (90.3%)	546 (87.6%)	
	I do not know	36 (7.4%)	65 (10.4%)	
Where the first COVID-19 case was detected	Wuwei	3 (0.6%)	1 (0.2%)	[2]0.010*
	Xining	1 (0.2%)	2 (0.3%)	
	Wuhan	459 (94.3%)	563 (90.4%)	
	Pingxi	3 (0.6%)	2 (0.3%)	
	I do not know	21 (4.3%)	55 (8.8%)	
COVID-19 transmission route	From animal to person	18 (3.7%)	15 (2.4%)	[2]0.001*
	From person to person	300 (61.6%)	464 (74.5%)	
	All of the above	167 (34.3%)	138 (22.2%)	
	None of the above	2 (0.4%)	6 (%1)	
Symptoms of COVID-19	Fever and cough	361 (74.1%)	466 (74.8%)	10.799
	Heart attack	7 (1.4%)	3 (0.5%)	30.115
	Abdominal pain	40 (8.2%)	74 (11.9%)	10.046*
	Pneumonia	84 (17.2%)	124 (19.9%)	10.261
	Difficulty breathing	255 (52.4%)	357 (57.3%)	10.100
	All of the above	119 (24.4%)	143 (%23)	10.564
Ways of COVID-19 spread	Leafy vegetables	7 (1.4%)	7 (1.1%)	40.846
	Undercooked meat products	22 (4.5%)	20 (3.2%)	10.257
	Pets	20 (4.1%)	12 (1.9%)	40.048*
	Respiratory droplets	391 (80.3%)	502 (80.6%)	10.904
	Cold, common cold	150 (30.8%)	186 (29.9%)	10.734
	All of the above	76 (15.6%)	89 (14.3%)	10.540

Table 8. Evaluation of the answers given to the attitude questions according to gender

		Male	Female	
		n (%)	n (%)	p
Protection measures against COVID-19	Mouth mask	42 (8.6%)	70 (11.2%)	10.152
	Physical distance	23 (4.7%)	35 (5.6%)	10.506
	Hygiene	14 (2.9%)	24 (3.9%)	20.470
	All of the above	441 (90.6%)	546 (87.6%)	10.125
	None of the above	1 (0.2%)	5 (0.8%)	30.239
COVID-19 is a health risk	Yes	451 (92.6%)	593 (95.2%)	10.072
	No	36 (7.4%)	30 (4.8%)	
Avoiding consumption of meat and meat products due to coronavirus	Yes	29 (%6)	44 (7.1%)	10.460
	No	458 (%94)	579 (92.9%)	
COVID-19 had an impact on social life	Yes	453 (%93)	583 (93.6%)	10.710
	No	34 (%7)	40 (6.4%)	
The negative impact of COVID-19 on the decision to undergo dental treatment	It didn't affect me, I am getting my dental treatment	206 (42.3%)	237 (%38)	10.134
	Affected, I am delaying my dental treatment	72 (14.8%)	81 (%13)	
	It is affected, I only had emergency dental treatments	209 (42.9%)	305 (%49)	

4. Discussion

The ABK towards COVID-19 affects the severity of the infectious disease, the extent of its spread, and the mortality rate. It is necessary to eliminate the lack of knowledge of the society against COVID-19, which poses a serious threat to public health, to change attitudes and behaviors, and to take necessary measures. The serious increase in the number of cases and loss of life negatively affected the patients' psychology and caused fear (8,22,24). Although there were many web-based surveys on COVID-19 in the literature review, the current study is a rare hand-delivered survey. This study aimed to evaluate the level of ABK and fear of COVID-19 of patients who applied at the School of Dentistry in Istanbul Medipol University.

Dentists are at great risk because they are in close contact with the patient's oral cavity, with the aerators and micromotor instruments rotating at high speed, scattering around aerosols and droplets (3,9,10). Dental treatments can cause the virus to spread easily due to aerosols. Therefore, various preventions should be taken before and during dental treatments (9,16-18).

The majority of the participants said that COVID-19 could be spread by aerosol generated during dental treatment, from person to person was the main transmission route, the most common symptoms of the disease were fever and coughing, and breathing difficulties, and the spread route was primarily respiratory droplets (4,11,14,16,20,23).

In line with the current study, a survey conducted in Lebanon and another study in Turkey revealed that television was the first news source about COVID-19 (27). The rate of men hearing about COVID-19 from the internet and women hearing from television were higher.

In addition, the rate of women stating from person to person as the transmission route of the disease and abdominal pain as one of the symptoms of the disease was higher than men.

In this study, we examined COVID-19 fear levels of patients who applied to the dental school during the pandemic period in Turkey and determined that individuals had a moderate fear of COVID-19 in agreement with the literature (28).

Alicilar et al. (25) conducted a study on 1179 people in Turkey; 30% of the participants stated that they felt completely safe, while the majority were worried about COVID-19.

Gencer N (28) and Bakioglu et al. (29) evaluated the fear level of women and found it to be higher than men. They found no statistically significant difference between the individuals regarding age, occupation, and educational status. They also stated that those who feared COVID-19 most were between the ages of 15-20. However, the current study revealed that the level of fear did not show a significant difference in terms of age (28). Consistent with the studies of Gencer N (28), Bakioglu et al. (29), we concluded that the level of education of our participants had no effect on their fear of COVID-19 (28).

88.9 % of our respondents stated that mouth masks-social distance-hygiene should be maintained against the new COVID-19. Alicilar et al.'s (25) study in April 2020 reported that the individuals practised protective measures at a very high rate; 98.0% washed their hands with soap and water, 83.3% wore masks, and 76.9% maintained social distance in Turkey (25).

94.1% of patients perceived COVID-19 as a risk for health, and 93.3% that COVID-19 affected their social life. The literature also showed a significant reduction in the number of patients applying to dental clinics during the COVID-19 outbreak (23). Almas et al. (23) reported that

91.2% of participants reported having only urgent dental care, whereas 6.5% did not choose to have a dental procedure at all. 46.3% of the patients had only emergency dental treatment, while 13.8% postponed their dental treatment until after the pandemic (10,14,23). They also found no statistically significant difference between the genders regarding the answers given to the attitude questions.

At the COVID-19 Scientific Committee meeting held on 23.03.2020, decisions were taken regarding the emergency dental treatments to be carried out during the pandemic period. These decisions are listed below (Ministry of Health, General Directorate of Public Health, "Emergency and Mandatory Service in Dentistry" item No: 44773052).

1. Severe pain due to pulpal inflammation toothache

2. Severe pain from pericoronitis or third molar

3. Postoperatively developed osteitis or alveolitis

4. Abscess causing localized pain and swelling or bacterial infection

5. Pain or soft tissue trauma due to tooth fracture

6. Trauma-induced tooth avulsion/luxation

7. Jaw or face fractures

8. Acute and painful lesions/ulcerations of the oral mucosa

9. Life-threatening or uncontrolled bleeding

10. Intraoral/extraoral infections threatening the patient's airway patency

11. Treatment of patients who are planning to receive radiotherapy and chemotherapy or who have received an organ transplant and are planned to be transplanted

12. Patients have systemic disease requiring dental consultation

13. Suture removal, temporary restoration loss/fractures, and preventing the use of removable prosthesis non-aerosol treatment of dental caries

14. Patients with orthodontic treatment dislocation and breakage and wires

15. Newborn patients with cleft lip and palate requiring nutritional plate application

16. Temporomandibular joint luxation

17. Biopsy (in cases malignancy is suspected) (30).

In this study, 117 participants out of 1110 had SARS-CoV-2. We determined that the PCR test was primarily performed for the diagnosis. A small number was abroad in the last 14 days, and 13.5% had people diagnosed with COVID-19 in their immediate surroundings in the last 14 days. Most stated that they should maintain social distance with other patients in the waiting room (83.4%).

We observed that the patients mostly applied to the clinic for restorative dental treatment and the least visited the school of dentistry with aesthetic complaints. This situation supports the patients' views of having emergency treatment procedures first.

According to recent research, the preventive measures that dentists should take against the possibility of the spread of SARS-CoV-2 infection were defined in 3 different stages:

Primary precautions: Use of a disposable cap, disposable surgical mask, white coat, safety glasses or face shield, disposable latex or nitrile gloves.

Secondary measures: In addition to the above measures, wearing reusable isolation gowns or surgical gowns.

Although no action should be taken on an infected person, in such a situation, close contact is inevitable, and special protective clothing is required (17).

Dental professionals should prefer extraoral imaging methods such as panoramic radiography instead of intraoral radiographic techniques during this pandemic, as it may cause coughing (17).

In addition, mouth rinse before the dental process has been proved to decrease microorganisms' load in droplets and aerosols. Widely used as a mouthwash in dentistry, it is known that chlorhexidine is not effective enough to kill the COVID-19. Since SARS-CoV-2 is sensitive to oxidation, 1% hydrogen peroxide or mouthwashes containing oxidative agents such as 0.2% povidone are recommended (3,6,7,14,17,18).

Further studies with more participation and questionnaire surveys including different questions are needed to raise society's awareness against COVID-19 to improve and protect public health. Furthermore, there was no vaccine evaluation since the vaccination studies for COVID-19 had not yet been clarified at the time of this study.

Dental clinics, especially the department of dentomaxillofacial radiology, are places of intensive routine patient access and high risk for COVID-19 outbreak. Dentists and clinical staff should take necessary measures to protect the health of both the patients and their own. All dental patients should be considered suspicious for COVID-19.

As a result, we found in the current study positive attitudes and behaviors towards and knowledge of COVID-19 in a group of patients who applied to a dental school. There was a significant positive correlation in the patients' attitudes and behaviors towards and knowledge of COVID-19. There is a need for further studies to raise society's awareness of COVID-19.

With the recent developments in vaccines against COVID-19 and the decrease in the number of deaths and cases due to COVID-19, fear is gradually decreasing in patients applying to dentistry and in the Turkish society.

Finally, as long as the pandemic continues, dental health professionals should take supplement precautions in dental clinics to prevent contamination against COVID-19, and more efforts should be made to improve public knowledge, attitude, and behavior.

Conflict of interest

There was no conflict of interest to declare.

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