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Evaluation of Dentists' Awareness of The COVID-19 Pandemic, Attitudes, and Behaviors Regarding Infection Control, and Anxiety Levels by Specialty and Gender

Diş Hekimlerinin COVİD-19 Pandemisi Hakkında Farkındalık, Enfeksiyon Kontrolü ile İlgili Tutum ve Davranış ve Anksiyete Düzeylerinin Uzmanlık ve Cinsiyete Göre Değerlendirilmesi

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Abstract

Aim: Coronavirus disease (COVID-19), declared a pandemic by the World Health Organization, poses a major threat to healthcare professionals. This study aims to evaluate knowledge levels about the Covid-19 pandemic, attitudes towards infection control in dental clinics and behavior, and levels of anxiety about Covid-19 in terms of dentists and to reveal the differences between gender and specialties.

Material and Methods : A total of 450 dentists were included in the study. Socio-demographic data, awareness of the Covid-19 pandemic, attitudes and behaviors regarding infection control in dental clinics, and anxiety levels about Covid-19 of dentists were recorded using an online questionnaire. All statistical analyzes were conducted with IBM SPSS 25.0 program.

Results: It was observed that female dentists were more afraid when they heard about death rates related to COVID-19. The questioning of patients with respiratory problems such as cough and difficulty breathing and questioning whether patients have attended any recent meeting or rendezvous were observed more frequently in female dentists. ($p<0.001$). It was determined that those who postpone treating the patient in suspected cases are mostly non-specialist dentists. It is observed that specialist dentists are more aware of issues such as using anti-microbial mouthwash usage, applying rubber dam isolation, using (surgical) suction with high suction power to patients before dental procedures. ($p<0.001$).

Discussion and Conclusions: Since dentists are in an occupational group with a high risk of exposure to infectious diseases, they must consider every patient as an infected individual and be very careful about taking standard precautions against infectious diseases.

Keywords: covid-19, dentistry, dental hygiene, anxiety, awareness

Öz

Amaç: Dünya sağlık örgütü tarafından pandemi ilan edilen koronavirüs hastalığı (Covid-19), sağlık çalışanları için büyük bir tehdit oluşturmaktadır. Çalışmamızın amacı, enfeksiyona maruz kalma ve bulaşı yayma açısından birinci derece risk grubunda değerlendiren diş hekimleri açısından, Covid-19 pandemisi ile ilgili bilgi düzeyleri, diş kliniklerinde enfeksiyon kontrolü ile ilgili tutum ve davranışları ve Covid-19 ile ilgili endişe düzeyleri arasındaki ilişkinin değerlendirilmesi, cinsiyet ve uzmanlıklar arası farklılıkların ortaya konmasıdır.

Gereç ve Yöntem: Toplam 450 diş hekimi çalışma kapsamına alınmıştır. Sosyo-demografik özellikler, diş hekimlerinin Covid-19 pandemisi ile ilgili farkındalıkları, diş hekimliği kliniklerinde enfeksiyon kontrolü ile ilgili tutum ve davranışları ve Covid-19 ile ilgili endişe düzeylerini ölçecek şekilde elektronik formlar kullanılmıştır. Tüm istatistiksel analizler IBM SPSS 25.0 programı ile yapılmıştır.

Bulgular: Kadın diş hekimlerinin Covid-19'a bağlı ölüm oranları hususunda daha fazla korku/endişe hissettiği ve hastalara öksürük, solunum güçlüğü veya buna benzer solunum yolu problemleri olup olmadığı, herhangi bir toplantı veya buluşmaya katılıp katılmadığı sorularını daha sıklıkla yönelttiği görülmektedir. ($p<0.001$). Şüpheli durumlarda hastanın tedavisini erteleyenlerin çoğunlukla uzman olmayan diş hekimleri olduğu belirlenmiştir. Uzman diş hekimlerinin dental işlem öncesi hastalara anti-mikrobiyal gargara kullanma, rubber dam izolasyonu uygulama, yüksek emiş gücü olan (cerrahi) tükrük emici kullanma gibi konularda daha farkında olduğu görülmektedir. ($p<0.001$).

Tartışma ve Sonuç: Diş hekimlerinin bulaşıcı hastalıklara maruz kalma riski yüksek bir meslek grubunda olmaları nedeniyle, her hastayı enfeksiyona sahip bir birey olarak kabul etmeleri ve bulaşıcı hastalıklara karşı standart önlemler almak konusunda çok dikkatli olmaları bir zorunluluktur.

Anahtar Kelimeler: Covid-19, dişhekimliği, dental hijyen, endişe, farkındalık

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INTRODUCTION

Covid-19, coronavirus disease was first reported in Wuhan city of Hubei Province of China and was defined as an acute respiratory infection that spread from this geography to the whole world1. SARS CoV-2 virus from the coronavirus family was first identified and named on January 7, 2020, and has not been previously detected in humans (2). The virus then spread outside of Hubei province, becoming widespread in many countries through human-to-human transmission. The World Health Organization (WHO) declared the coronavirus disease as a pandemic on March 11, 2020 (3). The cases spread rapidly in Western Pacific countries, European countries, South East Asia, Eastern Mediterranean countries, America and African countries, and China (4).

During the Covid-19 pandemic, frontline healthcare workers are particularly exposed to this infection risk. The highly contagious SARS-CoV-2 virus is an extra threat to the health system, apart from long working hours, physical and psychological stress, fatigue, and tiredness. Many medical staff were reported to have acquired the disease while working with infected individuals (5). Due to the aerosol and contamination during dental treatments in oral dental health centers, there is an increased risk of the virus spreading among staff or patients receiving treatment in the clinic (6,7). Due to the relatively prolonged incubation time of the disease (2-14 days) and because some individuals infected with COVID-19 do not show any symptoms, it becomes inevitable that it poses a major threat to dentists and auxiliary staff. Therefore, to control the disease and prevent transmission, dentists should be informed in the best way, and their perceptions and attitudes should be guided accordingly.

This study aims to evaluate knowledge levels about the Covid-19 pandemic, attitudes towards infection control in dental clinics and behavior, and levels of anxiety about Covid-19 in terms of dentists who evaluate in the first-degree risk group in terms of exposure to infection and spreading the transmission and to reveal the differences between gender and specialties.

MATERIALS and METHODS

Study Population

After obtaining the necessary permissions from the Ministry of Health, 450 dentists working in private and public institutions consisting of members officially registered with the Istanbul Chamber of Dentists were included in the study. The ethics committee report of the study was obtained from the ethics committee of Yeni Yüzyil University Faculty of Dentistry, and the study protocol was conducted following the Helsinki Declaration guidelines. Dentists between the ages of 25-65 who voluntarily filled out and approved electronic forms were included in the study.

Methodology

A questionnaire consisting of 26 closed-ended questions created by compiling international guides and publications was sent to the members by e-mail, and members of the association were asked to respond (8,9,10,11). The questionnaire sent to the participants was created by the researchers using "Google Form." In our research, questionnaire questions directed to dentists were created to measure socio-demographic characteristics, awareness of dentists about the Covid-19 pandemic, attitudes, and behaviors regarding infection control in dental clinics and Covid-19 related anxiety levels. The first part of the questionnaire was composed of questions evaluating the dentists' socio-demographic characteristics (age, gender, duration of professional experience and status of specialty, affiliated institution). In the 2nd and 3rd parts of the questionnaire, an evaluation was made using questions measuring the knowledge levels about the Covid-19 pandemic, attitudes and behaviors related to infection control in dental clinics, and levels of anxiety about Covid-19.

Statistical Method

All statistical analyzes were conducted with IBM SPSS 25.0 program. Descriptive statistics in the analyzes were stated as frequency (f) and percentage (%). The socio- demographic profile of dentists was examined first in the study. Later on, dentists' socio- demographic characteristics by gender, age, and specialty, and knowledge levels about the Covid-19 pandemic, attitudes, and behaviors regarding infection control in dental clinics and anxiety levels regarding Covid-19 were compared by Chi-Square analysis. Statistical significance was determined at $p<0.05$.

RESULTS

The sample of the study consists of 450 dentists selected with a simple random method from the population. 52.9% of dentists who voluntarily participate in the research are female, and 47.1% are male. It was determined that 18.2% of dentists who voluntarily participate in the research were

between 25-35 years old, 30.2% were between 36-45 years old, 30.2% were between 46-55 years old, and 21.3% were aged 56 and over. It was determined that 31.1% of dentists who voluntarily participate in the research were specialist dentists (8 specialties), and 68.9% were not. 54.7% of dentists who voluntarily participate in the research have 21 years or more professional experience. 13.3% of dentists voluntarily participate in the research work in university hospitals, 36% in state hospitals, and 50.7% in private hospitals/private polyclinics.

Comparison of Dentists' Socio-Demographic Characteristics According to Their Gender and Their Answers to Questions about Covid-19

It was determined that the age distribution of dentists according to their gender was statistically different ($p<0.001$). There was no statistical difference between a dentist and specialist dentist distribution ($p>0.05$). A statistically significant difference was found between the distributions of professional experience time according to the gender of dentists ($p<0.05$). There was no statistical difference between the distribution of institutions where dentists work according to gender ($p>0.05$). A statistically significant difference was found between the distribution of working status of dentists according to gender during the pandemic period ($p<0.001$). (Table 1)

It was determined that dentists' chronic disease status distribution according to their gender was statistically different ($p<0.001$). It was determined that the COVID- 19 risk group in the household distribution of dentists according to their gender was statistically different ($p<0.001$). It was determined that afraid of COVID-19 transmission status distribution of dentists according to their gender was statistically different ($p<0.001$). There was no statistical difference between the afraid of COVID- 19 transmission status distribution according to the gender of dentists ($p>0.05$). It was determined that the distribution of afraid status when hearing about death rates related to COVID-19 according to the gender of dentists was statistically different ($p<0.001$). (Table 2)

When the distribution of dental practices by the dentists who participated in the study voluntarily according to their gender during the pandemic period is investigated, it was observed that female dentists did not perform the biopsy and temporomandibular joint luxation, 58.3% of those who perform trauma therapy and 60.0% of those who remove the suture were female dentists. Besides, it was determined that male dentists constitute 54.5% of those who perform postoperatively developed osteitis or alveolitis treatment, 69.2% of those who perform treatment of the patients for whom dental consultation is requested for medical problems, 52.6% of those who perform root canal treatment, 65.0% of those who perform bleeding control, 70.0% of those who perform treatment of intraoral/extraoral infections that threaten the patient's airway patency, 58.7% of those who perform tooth extraction and 61.1% of those who perform abscess drainage. (Table 3)

It was determined that the distribution of questioning whether the patients had respiratory problems such as cough and respiratory distress was statistically different according to the gender of dentists ($p<0.01$). There was no statistical difference between the distributions of questioning whether they had close contact with people diagnosed with Covid-19 according to the gender of dentists ($p>0.05$). It was determined that the distribution of questioning whether the patients had recently participated in any meeting or rendezvous was statistically different according to the gender of dentists ($p<0.001$). There was no statistical difference between the status of postponing the treatment of the patient deemed suspected distribution according to the gender of dentists ($p>0.05$). (Table 4)

It was determined that the distribution of the thinking that surgical masks prevent cross-infection of dentists according to their gender was statistically different ($p<0.001$). It was determined that the distribution of the state of thinking that N- 95/FFP2 masks should be worn in routine dental treatments during the pandemic period of dentists according to their gender was statistically different ($p<0.001$). There was no statistical difference between the N-95/FFP2 mask use case distributions according to the gender of dentists ($p>0.05$). It was determined that the distributions of obeying the social isolation rules of dentists according to their gender were statistically different ($p<0.01$). It was determined that the distribution of the status of thinking to continue the infection measures taken during the pandemic period in the same way of dentists according to their gender was statistically different ($p<0.01$). (Table 5)

There was no statistical difference between distributions of attention to infection controls in each patient according to the gender of dentists ($p>0.05$). There was no statistical difference between the distribution of anti-microbial mouthwash usage status to patients before dental procedures according to the gender of dentists ($p>0.05$). It was determined that the distribution rubber dam usage status for each patient according to the gender of dentists was statistically different ($p<0.05$). It was determined that the distributions of the rubber dam usage before the pandemic according to the gender of dentists were statistically different ($p<0.001$). There was no statistical difference between the distribution of the usage status of (surgical) suction with high suction power for each patient according to the gender of dentists ($p>0.05$). (Table 6)

Table 1. Comparison of the socio-demographic characteristics of dentists according to their gender by Chi-square test.

		Female			Male			P
		N=238	a	b	N=212	a	b	
Age	25-35 Age Range	50	61.0	21.0	32	39.0	15.1	,000***
	36-45 Age Range	88	64.7	37.0	48	35.3	22.6	
	46-55 Age Range	46	33.8	19.3	90	66.2	42.5	
	56 Years and Older	54	56.3	22.7	42	43.8	19.8	
Do you have any specialties?	I have a specialty.	74	52.9	31.1	66	47.1	31.1	.993
	I have no specialty.	164	52.9	68.9	146	47.1	68.9	
Your professional experience period?	0-5 years	28	51.9	11.8	26	48.1	12.3	.015*
	6-10 years	24	75.0	10.1	8	25.0	3.8	
	11-15 years	26	65.0	10.9	14	35.0	6.6	
	16-20 years	44	56.4	18.5	34	43.6	16.0	
	21 Years and Above	116	47.2	48.7	130	52.8	61.3	
The institution you are affiliated with? (private, faculty, state)	State Hospital/Oral and Dental Health Center	98	60.5	41.2	64	39.5	30.2	.007**
	Private Hospital/Polyclinic	104	45.6	43.7	124	54.4	58.5	
	Universty Hospital	36	60.0	15.1	24	40.0	11.3	
Did you have a duty to work in the field during the COVID-19 pandemic?	Yes	70	76.1	29.4	22	23.9	10.4	,000***
	No	168	46.9	70.6	190	53.1	89.6	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

Comparison of the socio-demographic characteristics and the answers given to the questions about Covid-19 according to the status of the dentist's specialty

It was determined that the age distribution of dentists according to their specialty was statistically different (p<0.001). According to their specialty, there was no statistical difference between the gender status distributions of dentists (p>0.05). It was determined that dentists' years of experience distribution according to their specialty was statistically different (p<0.001). It was determined that the affiliated institutions' distribution of dentists according to their gender was statistically different (p<0.001). It was determined that working status during the pandemic period distributions of dentists according to their gender were statistically different (p<0.01).(Table 7)

According to their specialty, there was no statistical dif-

Table 2. Comparison of dentists' levels of concern about Covid-19 according to their gender.

		Female			Male			P
		N=238	a	b	N=212	a	b	
Do you have any chronic disease/diseases?	Yes	40	33.9	16.8	78	66.1	36.8	,000***
	No	198	59.6	83.2	134	40.4	63.2	
Is there anyone in the Covid-19 risk group in the household you live with?	Yes	82	67.2	34.5	40	32.8	18.9	,001***
	I live alone	32	47.1	13.4	36	52.9	17.0	
	No	124	47.7	52.1	136	52.3	64.2	
Are you afraid of getting infected with COVID-19 from a patient and co-worker?	Yes	140	49.3	58.8	144	50.7	67.9	,000***
	Sometimes/Partially	84	67.7	35.3	40	32.3	18.9	
	No	14	33.3	5.9	28	66.7	13.2	
Are you afraid of transmitting Covid-19 to your family and immediate surroundings depending on your dentistry activities?	Yes	196	54.1	82.4	166	45.9	78.3	.538
	Sometimes/Partially	30	46.9	53.1	34	53.1	16.0	
	No	12	50.0	5.0	12	50.0	5.7	
Do you feel afraid when you hear that people are dying because of COVID-19?	Yes	138	61.1	58.0	88	38.9	41.5	,001***
	Sometimes/Partially	54	40.9	22.7	78	59.1	36.8	
	No	46	50.0	19.3	46	50.0	21.7	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

ference between chronic disease status distributions of dentists (p>0.05). There was no statistical difference between the distributions of the COVID-19 risk group in the household according to dentists' specialty (p>0.05). According to their specialty, there was no statistical difference between afraid of COVID-19 transmission status distributions of dentists (p>0.05). It was determined that the afraid of COVID-19 transmission distribution of dentists according to their specialty was statistically different (p<0.001). According to dentists ' specialty, there was no statistical difference between distributions of being afraid status when hearing about death rates related to COVID-19 (p>0.05).(Table 8)

When the distribution of dental practices performed by the dentists who voluntarily participated in the study according to their specialty during the pandemic period is examined, it was observed that specialist dentists performed biop-

Table 3. Distribution of emergency dentistry practices done by dentists by gender.

Which emergency dental practices did you have most often during this period?	Female		Male	
	N=238	b	N=212	b
Biopsy (In cases where malignancy is suspected),	-	-	2	100.0
Trauma therapy	14	58.3	10	41.7
Removing the suture	54	60.0	36	40.0
Postoperatively developed osteitis or alveolitis treatment	10	45.5	12	54.5
Orthodontic wire and bracket repair	12	50.0	12	50.0
Acute and painful lesions/ulcerations of the oral mucosa	20	50.0	20	50.0
The patient for whom dental consultation is requested for medical problems	8	30.8	18	69.2
Temporomandibular joint luxation	-	-	8	100.0
Root Canal treatment	54	47.4	60	52.6
Bleeding control	14	35.0	26	65.0
Intraoral/extraoral infections that threaten the patient's airway patency	6	30.0	14	70.0
Tooth extraction	100	41.3	142	58.7
Abscess drainage	28	38.9	44	61.1

b Column Percentage

sies, 75.0% of those who perform trauma therapy, 46.7% of those who remove the suture and 60.0% of those who perform bleeding control were dentists with a specialty. Besides, it was observed that dentists without specialty constitute 90.9% of those who perform postoperatively developed osteitis or alveolitis treatment, 53.8% of those who perform treatment of the patients for whom dental consultation is requested for medical problems, 71.9% of those who perform root canal treatment, 70.0% of those who perform treatment of intraoral/extraoral infections that threaten the patient's airway patency, 82.6% of those who perform tooth extraction and 63.9% of those who perform abscess drainage. (Table 9)

There was no statistical difference between distributions of questioning whether patients have respiratory problems such as cough, breathing difficulties and whether they have close contact with people diagnosed with Covid-19 according to the status of dentists' specialty ($p> 0.05$). It was determined that the distribution of questioning whether the patients had recently participated in any meeting or rendezvous was statistically different according to the dentists' specialty ($p<0.05$). According to dentists ' specialty, it was determined that the distribution of postponing the treatment of the patient in suspected situations status was statistically different ($p<0.01$). (Table 10)

It was determined that the distribution of considering

Table 4. Comparison of dentists' awareness of the COVID-19 pandemic according to their gender.

		Female			Male			P
		N=238	a	b	N=212	a	b	
Before dental treatments, do you ask each of your patients if they had an incipient cough, breathing difficulty, or similar respiratory problems in the last 14 days?	Yes	208	56.5	87.4	160	43.5	75.5	.005*
	Sometimes/Partially	16	36.4	6.7	28	63.6	13.2	
	No	14	36.8	5.9	24	63.2	11.3	
Before dental treatments, do you ask each of your patients if they had close contact with at least 2 people known to have had a fever, respiratory complaints, or anyone diagnosed with 2019-nCoV in the last 14 days?	Yes	164	56.9	68.9	124	43.1	58.5	.067
	Sometimes/Partially	34	47.2	14.3	38	52.8	17.9	
	No	40	44.4	16.8	50	55.6	23.6	
Before dental treatments, do you ask each of your patients if they had recently attended any meetings or rendezvous, or if they have close contact with many people they do not know?	Yes	86	57.3	36.1	64	42.7	30.2	.001**
	Sometimes/Partially	74	62.7	31.1	44	37.3	20.8	
	No	78	42.9	32.8	104	57.1	49.1	
Do you postpone the treatment of the patient in suspected situations?	Yes	212	54.9	89.1	174	45.1	82.1	.062
	Sometimes/Partially	4	28.6	1.7	10	71.4	4.7	
	No	22	44.0	9.2	28	56.0	13.2	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

Table 5. Comparison of dentists' attitudes and behaviors regarding infection control according to their gender

		Female			Male			p
		N=238	a	b	N=212	a	b	
Do you think surgical masks prevent cross-infection?	Yes	62	39.2	26.1	96	60.8	45.3	,000***
	Sometimes/Partially	82	62.1	34.5	50	37.9	23.6	
	No	94	58.8	39.5	66	41.3	31.1	
Do you think N-95/FFP2 masks should be worn in routine dental treatments depending on the current pandemic?	Yes	230	55.8	96.6	182	44.2	85.8	,000***
	Sometimes/Partially	2	12.5	0.8	14	87.5	6.6	
	No	6	27.3	2.5	16	72.7	7.5	
Have you ever used an N-95/FFP2 mask in your clinic before?	Yes	38	46.3	16.0	44	53.7	20.8	.120
	Sometimes/Partially	18	42.9	7.6	24	57.1	11.3	
	No	182	55.8	76.5	144	44.2	67.9	
Did you and your household obey the social isolation rules?	Yes	228	55.1	95.8	186	44.9	87.7	.002*
	Sometimes/Partially	10	27.8	4.2	26	72.2	12.3	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

that surgical masks prevent cross infection and that N-95/FFP2 masks should be worn for routine dental treatments status was statistically different according to dentist's specialty (p <0.001). There was no statistical difference between the distributions of N-95/FFP2 mask usage before according to dentists' specialty (p>0.05). According to the dentist's specialty, there was no statistical difference between distributions of obeying the social isolation rules (p>0.05). (Table 11)

It was determined that the status of patients using anti-microbial mouthwash before dental procedure and using rubber dam for each patient distribution was statistically different according to the dentist's specialty (p <0.001). It was determined that the distribution of using rubber dam insulation before the pandemic and the use of (surgical) suction with high suction power in each patient was statistically different according to the dentist's specialty (p <0.001). It was determined that the distribution of the status of thinking to continue the infection measures taken during the pandemic period in the same way of dentists according to their specialty was statistically different (p<0.01). (Table 12)

Table 6. Comparison of dentists' attitudes and behaviors regarding infection control according to their gender

		Female			Male			p
		N=238	a	b	N=212	a	b	
Do you pay attention to infection control measures in each patient?	Yes	222	52.6	93.3	200	47.4	94.3	.059
	Sometimes/Partially	16	66.7	6.7	8	33.3	3.8	
	No	-	-	-	4	100.0	1.9	
Do you use anti-microbial mouthwash (1% hydrogen peroxide or 0.2% povidone-iodine) to your patients before the dental procedure?	Yes	154	55.8	64.7	122	44.2	57.5	.096
	Sometimes/Partially	28	41.2	11.8	40	58.8	18.9	
	No	56	52.8	23.5	50	47.2	23.6	
Do you use rubber dam insulation for each patient?	Yes	22	68.8	9.2	10	31.3	4.7	.013
	Sometimes/Partially	38	65.5	16.0	20	34.5	9.4	
	No	178	49.4	74.8	182	50.6	85.8	
Did you use a rubber dam before the pandemic?	Yes	12	40.0	5.0	18	60.0	8.5	,000***
	Sometimes/Partially	40	90.9	16.8	4	9.1	1.9	
	No	186	49.5	78.2	190	50.5	89.6	
Do you use (surgical) suction with high suction power in every patient?	Yes	132	54.1	55.5	112	45.9	52.8	
	Sometimes/Partially	28	41.2	11.8	40	58.8	18.9	
	No	78	56.5	32.8	60	43.5	28.3	
Even if Covid-19 is brought under control, do you intend to continue the infection measures in the same way?	Yes	176	56.1	73.9	138	43.9	65.1	
	Sometimes/Partially	54	47.4	22.7	60	52.6	28.3	
	No	8	36.4	3.4	14	63.6	6.6	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

Table 7. Comparison of the socio-demographic characteristics of dentists according to their specialty

		I have a specialty.			I have no specialty.			p
		N=140	a	b	N=310	a	b	
Age	25-35 Age Range	18	22.0	12.9	64	78.0	20.6	,000***
	36-45 Age Range	58	42.6	41.4	78	57.4	25.2	
	46-55 Age Range	28	20.6	20.0	108	79.4	34.8	
	56 Years and Older	36	37.5	25.7	60	62.5	19.4	
Sex	Female	74	31.1	52.9	164	68.9	52.9	.993
	Male	66	31.1	47.1	146	68.9	47.1	
Your professional experience period?	0-5 years	10	18.5	7.1	44	81.5	14.2	,000***
	6-10 years	8	25.0	5.7	24	75.0	7.7	
	11-15 years	24	60.0	17.1	16	40.0	5.2	
	16-20 years	30	38.5	21.4	48	61.5	15.5	
	21 Years and Above	68	27.6	48.6	178	72.4	57.4	
The institution you are affiliated with? (private, faculty, state)	State Hospital/Oral and Dental Health Center	20	12.3	14.3	142	87.7	45.8	,000***
	Private Hospital/Polyclinic	72	31.6	51.4	156	68.4	50.3	
	Universty Hospital	48	80.0	34.3	12	20.0	3.9	
Did you have a duty to work in the field during the Covid-19 pandemic?	Yes	18	19.6	12.9	74	80.4	23.9	.007*
	No	122	34.1	87.1	236	65.9	76.1	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

DISCUSSION

Covid-19, which has emerged as a major health problem worldwide, was recognized as a pandemic on March 3, 20201,12. For most dentists, it was the first time they experienced dental practices during such a pandemic. In the early stages of the pandemic, only emergency cases defined by the Ministry of Health were intervened in dentistry13. Possible modes of transmission in the dentistry clinic include direct contact with the patient face-to-face and exposure to saliva, blood, and other body fluids. It is known that Covid 19 is a disease transmitted by droplets14.

Table 8. Comparison of dentists' levels of concern about Covid-19 according to their specialty status.

		I have a specialty.			I have no specialty.			p
		N=140	a	b	N=310	a	b	
Do you have any chronic disease/diseases?	Yes	38	32.2	27.1	80	67.8	25.8	.765
	No	102	30.7	72.9	230	69.3	74.2	
Is there anyone in the Covid-19 risk group in the household you live with?	Yes	36	29.5	25.7	86	70.5	27.7	.150
	I live alone	28	41.2	20.0	40	58.8	12.9	
	No	76	29.2	54.3	184	70.8	59.4	
Are you afraid of getting infected with COVID-19 from a patient and co-worker?	Yes	88	31.0	62.9	196	69.0	63.2	.946
	Sometimes/Partially	38	30.6	27.1	86	69.4	27.7	
	No	14	33.3	10.0	28	66.7	9.0	
Are you afraid of transmitting COVID-19 to your family and immediate surroundings depending on your dentistry activities?	Yes	94	26.0	67.1	268	74.0	86.5	,000***
	Sometimes/Partially	36	56.3	25.7	28	43.8	9.0	
	No	10	41.7	7.1	14	58.3	4.5	
Do you feel afraid when you hear that people are dying because of COVID-19?	Yes	70	31.0	50.0	156	69.0	50.3	.378
	Sometimes/Partially	46	34.8	32.9	86	65.2	27.7	
	No	24	26.1	17.1	68	73.9	21.9	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

Therefore, dentists are in the first-degree risk group regarding exposure to infection by direct contact and spreading the virus. Indirect contact may cause by contaminated instruments and the clinical environment. To prevent its spread to working staff and provide safe treatment practices, qualified training of all dental health personnel is required, considering the highly contagious nature of Covid-19. In addition to routine infection prevention methods, measures such as N95 masks, surgical gowns, glasses, face visors, medical caps, and surgical aspirators have gained importance in preventing Covid-19 transmission. Aerosols generated during routine dental

Table 9. Distribution of dental practices performed by dentists according to their specialty

Which emergency dental practices did you have most often during this period?	I have a specialty.		I have no specialty.	
Biopsy (In cases where malignancy is suspected),	2	100.0	-	-
Trauma therapy	18	75.0	6	25.0
Removing the suture	42	46.7	48	53.3
Postoperatively developed osteitis or alveolitis treatment	2	9.1	20	90.9
Orthodontic wire and bracket repair	10	41.7	14	58.3
Acute and painful lesions/ulcerations of the	20	50.0	20	50.0
oral mucosa				
The patient for whom dental consultation is requested for medical problems	12	46.2	14	53.8
Temporomandibular joint luxation	2	25.0	6	75.0
Root Canal treatment	32	28.1	82	71.9
Bleeding control	24	60.0	16	40.0
Intraoral/extraoral infections that threaten the patient's airway patency	6	30.0	14	70.0
Tooth extraction	42	17.4	200	82.6
Abscess drainage	26	36.1	46	63.9

treatments pose a potential risk for dentists, auxiliary staff, and patients (14).

Studies conducted were shown that dentists are more likely to be affected by the new coronavirus disease than doctors and nurses (15). This study, it is aimed to determine the relationship between dentists' knowledge levels about the Covid-19 pandemic, attitudes and behaviors regarding infection control in dental clinics, and levels of anxiety related to Covid-19. It is thought that the results will shed light on dentists and the public during and post-pandemic.

It was determined that the vast majority of dentists participating in our study were female, with a rate of 52.9%, and their age was over 35. This finding is interpreted as a predicted situation because females prefer dentistry faculties more recently, and dentistry graduation age is more advanced. It has been observed that 54.7% of dentists have 21 years or more of professional experience, and 50.7% have worked in a private hospital/private polyclinic. It was determined that 31.1% of the dentists who voluntarily participated in the study were experts, and dentists from all specialties participated in the study. It was determined that specialist dentists are mostly female dentists, female dentists mostly work in state hospitals and university hospitals, and they work more in the field in the pandemic.

When the fear and anxiety of Covid-19 transmission is evaluated, male dentists seem to have more fear/anxiety. It is thought that the higher rate of chronic diseases seen in male dentists participating in our study may be related to this situation. However, it was determined that female dentists feel more fear/anxiety about death rates related to Covid-19. In studies conducted in the literature, it was determined that the participants' anxiety levels differed between genders. It was shown that the anxiety experienced by female physicians is more than that of male physicians16.

Table 10. Comparison of dentists' awareness about Covid-19 pandemic according to their specialty status.

		I have a specialty.			I have no specialty.			p
		N=140	a	b	N=310	a	b	
Do you ask each of your patients before dental treatments if they had an incipient cough, breathing difficulty, or similar respiratory problems in the last 14 days?	Yes	112	30.4	80.0	256	69.6	82.6	.293
	Sometimes/Partially	18	40.9	12.9	26	59.1	8.4	
	No	10	26.3	7.1	28	73.7	9.0	
Do you ask each of your patients before dental treatments if they had close contact with at least 2 people known to have had a fever, respiratory complaints, or anyone diagnosed with 2019-nCoV in the last 14 days?	Yes	90	31.3	64.3	198	68.8	63.9	.433
	Sometimes/Partially	26	36.1	18.6	46	63.9	14.8	
	No	24	26.7	17.1	66	73.3	21.3	
Before dental treatments, do you ask each of your patients if they had recently attended any meetings or rendezvous, or if they have close contact (airplane, public transport, etc.) with many people they do not know?	Yes	48	32.0	34.3	102	68.0	32.9	.042
	Sometimes/Partially	46	39.0	32.9	72	61.0	23.2	
	No	46	25.3	32.9	136	74.7	43.9	
Do you postpone the treatment of the patient in suspected situations?	Yes	108	28.0	77.1	278	72.0	89.7	.002*
	Sometimes/Partially	6	42.9	4.3	8	57.1	2.6	
	No	26	52.0	18.6	24	48.0	7.7	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

Table 11. Comparison of dentists' attitudes and behaviors regarding infection control according to their specialty

		I have a specialty.			I have no specialty.			p
		N=140	a	b	N=310	a	b	
Do you think surgical masks prevent cross-infection?	Yes	78	49.4	55.7	80	50.6	25.8	,000***
	Sometimes/Partially	34	25.8	24.3	98	74.2	31.6	
	No	28	17.5	20.0	132	82.5	42.6	
Do you think N-95/FFP2 masks should be worn in routine dental treatments depending on the current pandemic?	Yes	122	29.6	87.1	290	70.4	93.5	.018
	Sometimes/Partially	10	62.5	7.1	6	37.5	1.9	
	No	8	36.4	5.7	14	63.6	4.5	
Have you ever used an N-95/FFP2 mask in your clinic before?	Yes	34	41.5	24.3	48	58.5	15.5	.062
	Sometimes/Partially	10	23.8	7.1	32	76.2	10.3	
	No	96	29.4	68.6	230	70.6	74.2	
Did you and household obey the social isolation rules?	Yes	124	30.0	88.6	290	70.0	93.5	.072
	Sometimes/Partially	16	44.4	11.4	20	55.6	6.5	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***

In a study conducted with healthcare professionals in China, it was reported that female and primary health care workers were negatively affected by the disease and may need psychological support (17). In another study conducted with doctors, it was reported that female gender, celibacy, having less work experience, and working in the field were associated with high levels of anxiety and depression (18). Psychological emotions related to stress, social phobia, depression, panic, and fear are more common in females, which may be related to anxiety. It was stated that females are negatively affected by stressful processes more than males, which is related to their psychological state (19). It was observed that female dentistry students were more stressed than male students under normal conditions, and the reason for this is thought to be that while males hide their anxiety, the female generally feels stress more intensely (20) . In a study conducted at the medical school in China, on the other hand, it was determined that the psychological conditions of male and female students were similarly affected by the Covid-19 pandemic (21).

Tooth extraction and root canal treatment are the most common applications among dental practices performed by dentists during the pandemic period. Still, in another study conducted in China, less dental trauma was reported than before the pandemic, and an increase in dental and oral infection rates was

Table 12. Comparison of dentists' attitudes and behaviors regarding infection control according to their specialty

		I have a specialty.			I have no specialty.			p
		N=140	a	b	N=310	a	b	
Do you pay attention to infection control measures in each patient?	Yes	140	33.2	100.0	282	66.8	91.0	-
	Sometimes/Partially	-	-	-	24	100.0	7.7	
	No	-	-	-	4	100.0	1.3	
Do you use anti-microbial mouthwash (1% hydrogen peroxide or 0.2% povidone-iodine) to your patients before the dental procedure?	Yes	90	32.6	64.3	186	67.4	60.0	,000***
	Sometimes/Partially	32	47.1	22.9	36	52.9	11.6	
	No	18	17.0	12.9	88	83.0	28.4	
Do you use rubber dam insulation for each patient?	Yes	24	75.0	17.1	8	25.0	2.6	,000***
	Sometimes/Partially	2	3.4	1.4	56	96.6	18.1	
	No	114	31.7	81.4	246	68.3	79.4	
Did you use a rubber dam before the pandemic?	Yes	24	75.0	17.1	8	25.0	2.6	,000***
	Sometimes/Partially	2	3.4	1.1	56	96.6	18.1	
	No	114	31.7	81.4	246	68.3	79.4	
Do you use (surgical) suction with high suction power in every patient?	Yes	92	37.7	65.7	152	62.3	49.0	,000***
	Sometimes/Partially	24	35.3	17.1	44	64.7	14.2	
	No	24	17.4	17.1	114	82.6	36.8	
Even if Covid-19 is brought under control, do you intend to continue the infection measures in the same way?	Yes	94	29.9	67.1	220	70.1	71.0	.160
	Sometimes/Partially	42	36.8	30.0	72	63.2	5635	
	No	4	18.2	2.9	18	81.8	5.8	

a Percent of Rows b Percent of Columns *p<0.05 **p<0.01 ***p<0.001

observed (22). It was determined that male dentists constitute 54.5% of those who perform postoperatively developed osteitis or alveolitis treatment, 69.2% of those who perform treatment of the patients for whom dental consultation is requested for medical problems, 52.6% of those who perform root canal treatment, 65% of those who perform bleeding control, 70% of those who perform treatment of intraoral/extraoral infections that threaten the patient's airway patency, 58.7% of those who perform tooth extraction and 61.1% of those who perform abscess drainage.

In this study, before dental treatments, in consequence of examining the awareness of dentists about the Covid-19 pandemic, it is seen that the dentists who ask whether they had a recent cough, difficulty breathing, or similar respiratory problems in the last 14 days, whether they have recently attended any meeting or meeting and have close contact with people they do not know questions to the patients and postpone the treatment of the patient in suspected cases are mostly female dentists. The higher level of knowledge of female dentists about Covid-19 is explained by the fact that females tend to be more prone to research health-related issues (23). A questionnaire study conducted among the 765 dentists who participated in the study determined that female dentists and dentists who attended post-graduation training had a higher level of knowledge. The majority of the participants (80.8%) had a medium level of knowledge and awareness. Still, in another study, it was observed that male participants had a higher level of knowledge (24).

More than 90% of dentists appear to be worried about themselves and their families in previous studies, but only 12% wear N95/FFP2 masks (25). In our study, while male dentists thought that surgical masks prevent cross-infection, depending on the current pandemic, the density of female dentists is higher among those who think that N95/FFP2 masks should be worn in routine dental treatments. Female dentists stated that they obey the social isolation more. In consequence of evaluating the attitudes and behaviors of dentists regarding infection control according to gender, it was determined that both groups showed equal sensitivity. While the rubber dam usage for each patient during the pandemic period was more common in female dentists, it was determined that it was preferred more by male dentists in routine.

There was no statistically significant difference in comparing the specialty of dentists and their level of concern about Covid-19. However, it was determined that non-specialist dentists were more afraid/worried about Covid-19 transmission due to their family and immediate environment. It is seen that specialist dentists mostly perform procedures such as biopsy, trauma treatment, removal of suture, and bleeding control during the pandemic period. It was determined that those who postpone treating the patient in suspected cases are mostly non-specialist dentists. This situation may be thought to be related to the more cautious and anxious approaches of non- specialist dentists compared to specialist dentists.

Regarding the Covid -19 pandemic awareness, it was determined that specialist dentists were more aware of questioning whether the patient had contact with many people before treatment and postponing the treatment of the suspected patient. Both dentist groups paid equal attention to social isolation rules. While specialist dentists think that surgical masks prevent cross-infection, depending on the current pandemic, non-specialist dentists think that N95/FFP2 masks should be used in routine dental treatments. Regarding attitudes and behaviors related to infection control, it was determined that the specialist and non-specialist dentist groups pay equal attention to infection precautions. It is observed that specialist dentists are more aware of issues such as using anti-microbial mouthwash usage, applying rubber dam isolation, using (surgical) suction with high suction power to patients before dental procedures. A study conducted reported that the knowledge and awareness levels of specialist dentists are higher than non-specialist dentists and dentistry students. However, it was suggested that the infection exposure rates of even experienced dentists increase in settings where intensive treatment services are provided to very large patient populations (26).

CONCLUSION

In light of all these results and information, since dentists are in an occupational group with a high risk of exposure to infectious diseases, they must consider every patient as an infected individual and be very careful about taking standard precautions against infectious diseases. All dentists and institutions they work with must adhere to protocols that determine what is required to prevent infection and what needs

to be done in case of exposure (27,28).

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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