

Investigating the observance frequency of the requirements for providing dental services during the COVID-19 epidemic in dental offices in Sari, Iran, in 2020

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Original Article

Abstract

BACKGROUND AND AIM: Given the nature of the dental profession, the tools and equipment used, and the direct contact with saliva and mucous membranes, it is crucial to observe all infection control principles. Due to the high prevalence and risks of coronavirus, and its novelty, and the sensitivity of dental work, the present study was conducted to investigate the observance frequency of requirements for providing dental services during the COVID-19 epidemic in dental offices in Sari, Iran.

METHODS: In the present study, 181 dentists, including 147 general dentists and 34 dental specialists, in Sari were surveyed. To collect data, the checklist of the Ministry of Health, Treatment, and Medical Education was used. It includes questions about the use of rubber dam, high-pressure suction, appropriate ventilation, air disinfection device, screening and triage of clients, and so on. After completing the checklist and determining the score, the data were statistically analyzed. Descriptive statistics (frequency analysis) and chi-square test were used to analyze the data. The statistical significant level was considered at $P < 0.05$.

RESULTS: The highest observance frequency of the requirements was related to Requirement 14 (observing the distance between clients' chairs) with a frequency of 97.2%, followed by Requirement 2 (the use of high-pressure suction), Requirement 7 (package of separate sterile disposable devices for each patient), and Requirement 15 (removal of all common devices from the waiting room) with a frequency of 97.0%. The highest observance frequency of preferences was related to Preference 4 (the use of one-way valves in the unit) with a frequency of 96.7%. Regarding employment history, dentists with more than 15 years of employment history observed only the item of waste disposal items in accordance with the health protocol significantly more than dentists with less employment history ($P = 0.04$).

CONCLUSION: In general, most dentists who participated in this study observed the health protocols to an acceptable level. Dental specialists observed most of the requirements more than general dentists.

KEYWORDS: Dental Health Services; COVID-19; Epidemics

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Coronaviruses are a large family of viruses and a subset of Coronaviridae that range from the common cold virus to agent of more severe diseases such as SARS, MERS, and COVID.^{1,2} Coronaviruses were discovered in

the 1960s.³ The virus is naturally prevalent in mammals and birds, although 7 human-transmitted coronaviruses have been identified so far. The latest type of them was Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), which emerged

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in December 2019 in Wuhan, China. The corona virus soon spread throughout the world.⁴ Their structure has a positive single-stranded RNA genome.⁵ The general and temporary name of 2019-nCoV was initially given to these viruses.⁶ People with co-morbidities and children with heart disease are at higher risk of coronaviruses. The severity of the cold caused by coronavirus is usually higher.⁷ Coronaviruses, which are the second leading cause of colds after rhinoviruses, are more likely to cause colds in winter and spring.⁸ Since there are 3 components of the microorganism, the host and the routes of transmission in the infection transmission cycle, to control the infection, it is necessary to remove one of these three components to prevent the cross-contamination.⁹

It has been found that SARS-CoV-2 can bind to human receptors of angiotensin-converting enzyme 2 (ACE2). A great number of these receptors are concentrated in the salivary glands that may explain the presence of SARS-CoV-2 in patients with salivary secretion.^{10,11} Thus, COVID-19 can be transmitted through aerosol and droplets formed during dental practices that may lead to the spread of infection in dental clinics.¹² Therefore, dentists should be very careful and take measures such as hand washing to prevent COVID-19. It is also necessary to use personal protective equipment (PPE) and cross-contamination prevention methods when performing dental work, especially when aerosol emissions are high.^{11,13} Standard PPE consists of gloves, masks, and gowns. However, in the case of airborne infections such as COVID-19, additional equipment including goggles, masks, face shields, gloves, gowns, and rubber boots should be used.¹⁴ Due to the high prevalence and risks of coronavirus and its novelty, and the importance and sensitivity of dental work, the present study was conducted to investigate the requirements for providing dental services during the COVID-19 epidemic in dental offices in Sari, Iran.

Methods

This descriptive-analytical and cross-sectional study was conducted on dentists working in Sari, Iran in 2020. The present study was approved by the Ethics Committee of Mazandaran University of Medical Sciences (Ethical code: IR.MAZUMS.REC.1399.746). A total number of 181 dentists, including 147 general dentists and 34 dental specialists, completed the checklists for observing the requirements for providing dental services during the COVID-19 epidemic in dental clinics. The checklist of the Ministry of Health and Medical Education was used to collect data. The Deputy of the Ministry of Health and Medical Education of Iran presented the executive instruction of dental services on 2020.04.17 during the COVID-19 epidemic and the relevant checklist was sent to inform and monitor its proper implementation in all centers providing dental services. This instruction consists of 2 separate tables. The first table is related to the requirements (mandatory) and the second table is related to the preferences (optional) in reopening dental clinics during the COVID-19 epidemic. In the first table, 17 items and in the second one, 6 items are examined. This checklist includes questions about the use of rubber dam, high-pressure suction, proper ventilation, air disinfection device, screening and triage of clients, and so on.

First, the consent of the participating dentists was obtained and the items were examined with their consent and cooperation. The checklist covers demographic information such as age, gender, general dentist or dental specialist, and history of participation in retraining courses. A trained senior student completed the relevant checklist in person in clinics. After completing the checklist and calculating the score, the data were entered into SPSS software (version 16, SPSS Inc., Chicago, IL, USA) and statistically analyzed using descriptive tests (frequency analysis) and chi-square test. Statistical significance level

was considered at $P < 0.05$.

Results

In the present study, 181 dental office checklists, including 147 general dentists and 34 dental specialists, were evaluated. Among them, there were 129 (71.3%) men and 52 (28.7%) women, and 118 (65.2%) individuals participated in the infection control retraining course. The employment history of 93 dentists (51.3%) and 88 dentists (48.7%) consisted of less than 15 years (< 15) and 15 years or more ($15 \leq$), respectively.

Tables 1 and 2 show the observance frequency of the requirements and preferences required for dental services in clinics. According to table 1, the highest observance frequency (97.2%) was related to Requirement 14 (observing the distance between the clients' seats), followed by Requirement 2 (the use of high-pressure suction), Requirement 7 (package of separate sterile disposable devices for each patient), and Requirement 15 (removal of all common devices from the waiting room), all with a frequency of 96.7%.

Tables 3 and 4 show the frequency of observing the health requirements based on the studied variables. Regarding the employment history, only Requirement 6 (disposal of all wastes according to the infectious waste disposal protocol) was significantly more observed among dentists with an employment history more than 15 years (96.6%) than those with less employment history (88.2%) ($P = 0.040$). Moreover, the observance of Requirement 4 (the use of air disinfection device in the treatment department) ($P = 0.030$), Requirement 9 (appropriate management of the exit and entry to the laboratory) ($P = 0.030$), Requirement 10 (observing the time interval of at least 40 minutes between patients' visits) ($P = 0.001$), Requirement 11 (correct screening and triage of patients according to the instructions) ($P = 0.001$), and Requirement 12 (installation of triage chart and referral tables for suspected or confirmed COVID-19 patients) ($P = 0.010$) were significantly higher in dental specialists compared to general dentists.

Table 1. Frequency of observing the requirements for providing dental services in dental clinics in Sari

No.	Title	Yes [n (%)]	No [n (%)]
1	Using rubber dam	174 (96.1)	7 (3.9)
2	Using high-pressure suction	175 (96.7)	6 (3.3)
3	Using strong and suitable ventilation in the whole space of the dental center	172 (95.0)	9 (5.0)
4	Using air disinfection device in the treatment department	2 (1.1)	179 (98.9)
5	Trash bin equipped with pedal or eye sensor	143 (79.0)	38 (21.0)
6	Disposal of all waste	167 (92.3)	14 (7.7)
7	Using all disposable or sterile devices	175 (96.7)	6 (3.3)
8	Disposable turbines	83 (45.9)	98 (54.1)
	Sterile turbine with one-way valve	149 (82.3)	32 (17.7)
	Simple sterile turbine	172 (95.0)	9 (5.0)
9	Suitable management of the exit and entry to the laboratory	155 (85.6)	26 (14.4)
10	Suitable time interval between patients' visits	45 (24.9)	136 (75.1)
11	Screening and triage of clients	45 (24.9)	136 (75.1)
12	Installing triage charts and referral tables for suspected or confirmed COVID-19 patients	144 (79.6)	37 (20.4)
13	Installing educational posters for personal protection of clients	150 (82.9)	31 (17.1)
14	Observing the distance between the clients' seats	176 (97.2)	5 (2.8)
15	Removing all common equipment from the waiting room	175 (96.7)	6 (3.3)
16	Periodic disinfection of all surfaces	149 (82.3)	32 (17.7)
17	Accurate knowledge of the provisions of the instructions	155 (85.6)	26 (14.4)
18	Using appropriate personal protective equipment	172 (95.0)	9 (5.0)

COVID-19: Coronavirus disease 2019

Table 2. Frequency of observing the preferences for providing dental services in dental clinics of Sari

No.	Title	Yes [n (%)]	No [n (%)]
1	Isolation room for airborne infections with negative pressure	1 (0.6)	180 (99.4)
	Standard suction and aerosol disinfectant device and use of air conditioner equipped with UVC in the treatment section	1 (0.6)	180 (99.4)
	Standard suction and aerosol disinfection device and use of wall or ceiling UVC lamp in the treatment room	1 (0.6)	180 (99.4)
2	Digital thermometer	144 (79.6)	37 (20.4)
3	Pulse oximeter	140 (77.3)	41 (22.7)
4	Using one-way valves in the unit	175 (96.7)	6 (3.3)
5	Providing shoe covers, masks, and hand gel to patients before admission	172 (95.0)	9 (5.0)
6	Using an oxidising mouthwash	145 (80.1)	36 (19.9)

UVC: Ultraviolet C

Regarding the observance of preferences, the highest observance of preferences (96.7%) was related to Preference 4 (the use of one-way valves in the unit), while the lowest (0.6%) was related to the subgroups of Preference 1, including isolation treatment room for air infections with negative pressure, standard suction and aerosol disinfectant device and use of air conditioner equipped with UVC in the treatment section, and standard suction and aerosol disinfection device and use of wall or ceiling UVC lamp in the treatment room. In addition, there was no statistically significant difference between the observance frequency of these preferences in terms of gender, employment history, and participation in infection control retraining courses ($P < 0.050$).

Most dental specialists observed preferences more than general dentists, although this difference was not statistically significant in any of the items ($P > 0.050$). The only preference that was observed less by dental specialists (73.5%) than general dentists (81.6%) was Preference 6 (the use of oxidising mouthwashes), but the difference was not statistically significant ($P = 0.340$).

Discussion

People working in the field of dentistry are highly exposed to coronavirus due to their working conditions, so it is necessary to design appropriate protocols and prevention strategies focusing on the location of patients and members of the dental team.¹⁵ In the present study, the observance frequency of health protocols by general dentists and dental specialists in Sari was evaluated. According to the results of this study, the most observed

requirements were related to observing the distance between the clients' seats, followed by the use of high-pressure suction, a package of separate sterile disposable devices for each patient, and removal of all common devices from the waiting room. Furthermore, the lowest observance frequency was related to the use of air disinfection device in the treatment department.

In this study, the highest observance frequency of preferences was related to the preference of using one-way valves in the unit, and the lowest one was related to the subgroups of Preference 1, including isolation treatment room for air infections with negative pressure, standard suction and aerosol disinfectant device and use of air conditioner equipped with UVC in the treatment section, and standard suction and aerosol disinfection device and use of wall or ceiling UVC lamp in the treatment department.

According to the results of this study, male and female dentists observed the requirements and preferences almost at equal levels. Furthermore, in the present study, the observance of requirements and preferences was compared between general dentists and dental specialists, and the observance of requirements such as the use of air disinfection device in the treatment department, suitable management of the exit and entry to the laboratory, observing the appropriate time interval between patients' visits, correct screening and triage of clients according to the instructions and installation of triage charts, and referrals tables for suspected or confirmed COVID-19 patients were significantly higher among dental specialists compared to general dentists.

Table 3. Investigating the distribution of the studied variables in the observance frequency of requirements 1 to 8 for the provision of dental services

Requirements	Variables		Yes [n (%)]	No [n (%)]	P
1- Rubber dam	Gender	Male	124 (96.1)	5 (3.9)	> 0.99
		Female	50 (96.2)	2 (3.8)	
	Participation in retraining courses	Yes	113 (95.8)	5 (4.2)	> 0.99
		No	61 (96.8)	2 (3.2)	
	Employment history (years)	< 15	90 (96.8)	3 (3.2)	0.71
		≥ 15	84 (95.5)	4 (4.5)	
Specialty	General dentist	140 (95.2)	7 (4.8)	0.35	
	Dental specialist	34 (100)	0 (0)		
2- High-pressure suction	Gender	Male	125 (96.9)	4 (3.1)	> 0.99
		Female	50 (96.2)	2 (3.8)	
	Participation in retraining courses	Yes	112 (94.9)	6 (5.1)	0.09
		No	63 (100)	0 (0)	
	Employment history (years)	< 15	91 (97.8)	2 (2.2)	0.43
		≥ 15	84 (95.5)	4 (4.5)	
Specialty	General dentist	141 (95.9)	6 (4.6)	0.59	
	Dental specialist	34 (100)	0 (0)		
3- Ventilation	Gender	Male	123 (95.3)	6 (4.7)	0.71
		Female	49 (94.2)	3 (5.8)	
	Participation in retraining courses	Yes	111 (94.1)	7 (5.9)	0.49
		No	61 (96.8)	2 (3.2)	
	Employment history (years)	< 15	92 (98.9)	1 (1.1)	0.16
		≥ 15	80 (90.9)	8 (9.1)	
Specialty	General dentist	138 (93.9)	9 (6.1)	0.21	
	Dental specialist	34 (100)	0 (0)		
4- Air disinfection device	Gender	Male	0 (0)	129 (100)	0.08
		Female	2 (3.8)	50 (96.2)	
	Participation in retraining courses	Yes	1 (0.8)	117 (99.2)	> 0.99
		No	1 (1.6)	62 (98.4)	
	Employment history (years)	< 15	1 (1.1)	92 (98.9)	> 0.99
		≥ 15	1 (1.1)	87 (98.9)	
Specialty	General dentist	0 (0)	147 (100)	0.03*	
	Dental specialist	2 (5.9)	32 (94.1)		
5- Trash bin equipped with pedal or eye sensor	Gender	Male	102 (79.1)	27 (20.9)	> 0.99
		Female	41 (78.8)	11 (21.2)	
	Participation in retraining courses	Yes	94 (79.7)	24 (20.3)	0.84
		No	49 (77.8)	14 (22.2)	
	Employment history (years)	< 15	73 (78.5)	20 (21.5)	> 0.99
		≥ 15	70 (79.5)	18 (20.5)	
Specialty	General dentist	117 (79.6)	30 (20.4)	0.64	
	Dental specialist	26 (76.5)	8 (23.5)		
6- Waste disposal	Gender	Male	118 (91.5)	11 (8.5)	0.76
		Female	49 (94.2)	3 (5.8)	
	Participation in retraining courses	Yes	109 (92.4)	9 (7.6)	> 0.99
		No	58 (92.1)	5 (7.9)	
	Employment history (years)	< 15	82 (88.2)	11 (11.8)	0.04*
		≥ 15	85 (96.6)	3 (3.4)	
Specialty	General dentist	133 (90.5)	14 (9.5)	0.07	
	Dental specialist	34 (100)	0 (0)		
7- Separate sterile disposable tools and devices	Gender	Male	124 (96.1)	5 (3.9)	0.67
		Female	51 (98.1)	1 (1.9)	
	Participation in retraining courses	Yes	113 (95.8)	5 (4.2)	0.66
		No	62 (98.4)	1 (1.6)	
	Employment history (years)	< 15	89 (95.7)	4 (4.3)	0.68
		≥ 15	86 (97.7)	2 (2.3)	
Specialty	General dentist	141 (95.9)	6 (4.1)	0.59	
	Dental specialist	34 (100)	0 (0)		

Table 3. Investigating the distribution of the studied variables in the observance frequency of requirements 1 to 8 for the provision of dental services (continue)

Requirements	Variables		Yes [n (%)]	No [n (%)]	P
8- a: Disposal turbine	Gender	Male	61 (47.3)	68 (52.7)	0.62
		Female	22 (42.3)	30 (57.7)	
	Participation in retraining courses	Yes	57 (48.3)	61 (51.7)	0.43
		No	26 (41.3)	37 (58.7)	
	Employment history (years)	< 15	43 (46.2)	50 (53.8)	> 0.99
		≥ 15	40 (45.5)	48 (54.5)	
Specialty	General dentist	67 (45.6)	80 (54.4)	> 0.99	
	Dental specialist	16 (47.1)	18 (52.9)		
8- b: Sterile turbine with valve	Gender	Male	104 (80.6)	25 (19.4)	0.39
		Female	45 (86.5)	7 (13.5)	
	Participation in retraining courses	Yes	100 (84.7)	18 (15.3)	0.30
		No	49 (77.8)	14 (22.2)	
	Employment history (years)	< 15	83 (89.2)	10 (10.8)	0.11
		≥ 15	66 (75.0)	22 (25.0)	
Specialty	General dentist	119 (81.0)	28 (19.0)	0.45	
	Dental specialist	30 (88.2)	4 (11.8)		
8- c: Simple sterile turbine	Gender	Male	124 (96.1)	5 (3.9)	0.28
		Female	48 (92.3)	4 (7.7)	
	Participation in retraining courses	Yes	109 (92.4)	9 (7.6)	0.12
		No	63 (100)	0 (0)	
	Employment history (years)	< 15	89 (95.7)	4 (4.3)	0.74
		≥ 15	83 (94.3)	5 (5.7)	
Specialty	General dentist	138 (93.9)	9 (6.1)	0.21	
	Dental specialist	34 (100)	0 (0)		

*Significance at the level of 0.05.

Most of the preferences were observed more by dental specialists compared to general dentists, but this difference was not statistically significant. It should be noted that due to the prevalence of coronavirus in the last year and a half and the novelty of the subject, there were no articles similar to the present study to compare the results, but some studies that were somewhat similar to the present study were used for this comparison.

Khader et al. evaluated dentists' knowledge, perception, and attitudes regarding COVID-19 and infection control among Jordanian dentists. In the mentioned study, 368 subjects were within the age range of 22 to 73 years.¹⁶

All subjects completed an online, 2-part questionnaire comprised of questions about demographic information and specialized information on coronavirus (including incubation period, symptoms, and ways of transmission). The results showed that 197 people (53.0%) had received infection control training and 28 people (7.7%) had participated in coronavirus training sessions. Moreover, 133 patients (1.36%) were aware of

the incubation period of the coronavirus from 1 to 14 days coronavirus incubation period, most of them were aware of the symptoms and methods of identifying at-risk patients and ways of transmission, and 275 people (7.74%) believed that patients should sit at a suitable distance from each other and wear masks in the waiting room.

In general, Jordanian dentists were aware of the symptoms, the way of transmission and control of the infection, and clinical procedures, but had a low level of knowledge of the additional precautions that protect staff.¹⁶ The number of dentists examined in the mentioned study was more than that examined in the present study and using the online questionnaire was far better and easier than manual completion of the questionnaire used in the present study. Furthermore, the subjects of the 2 studies were different. The subject of the mentioned study was the investigation of the dentists' perceptions and attitudes towards COVID-19 and infection control, while in the present study, dentists' observance of requirements and preferences of health protocols was evaluated.

Table 4. Investigating the distribution of the studied variables in the observance frequency of requirements 9 to 18 for the provision of dental services

Requirements	Variables		Yes [n (%)]	No [n (%)]	P
9- Suitable management of the exit and entry to the laboratory	Gender	Male	112 (86.8)	17 (13.2)	0.48
		Female	43 (82.7)	9 (17.3)	
	Participation in retraining courses	Yes	99 (83.9)	19 (16.1)	0.50
		No	56 (88.9)	7 (11.1)	
	Employment history (years)	< 15	80 (86.0)	13 (14.0)	> 0.99
		≥ 15	75 (85.2)	13 (14.8)	
Specialty	General dentist	122 (83.0)	25 (17.0)	0.03*	
	Dental specialist	33 (97.1)	1 (2.9)		
10- Time interval between patients	Gender	Male	32 (24.8)	97 (75.2)	> 0.99
		Female	13 (25.0)	39 (75.0)	
	Participation in retraining courses	Yes	30 (25.4)	88 (74.6)	0.85
		No	15 (23.8)	48 (76.2)	
	Employment history (years)	< 15	21 (22.6)	72 (77.4)	0.49
		≥ 15	24 (27.3)	64 (72.7)	
Specialty	General dentist	27 (18.4)	120 (81.6)	< 0.01*	
	Dental specialist	18 (52.9)	16 (47.1)		
11- Screening and triage	Gender	Male	27 (20.9)	109 (79.1)	0.06
		Female	18 (34.6)	34 (65.4)	
	Participation in retraining courses	Yes	29 (24.6)	89 (75.4)	> 0.99
		No	16 (25.4)	47 (74.6)	
	Employment history (years)	< 15	22 (23.7)	71 (76.3)	0.73
		≥ 15	23 (26.1)	65 (73.9)	
Specialty	General dentist	24 (16.3)	123 (83.7)	< 0.01*	
	Dental specialist	21 (61.8)	13 (38.2)		
12- Installing triage charts and referral tables for suspected patients	Gender	Male	99 (76.7)	30 (23.3)	0.15
		Female	45 (86.5)	7 (13.5)	
	Participation in retraining courses	Yes	89 (75.4)	29 (24.6)	0.08
		No	55 (87.3)	8 (12.7)	
	Employment history (years)	< 15	76 (81.7)	17 (18.3)	0.46
		≥ 15	68 (77.3)	20 (22.7)	
Specialty	General dentist	112 (76.2)	35 (23.8)	0.01*	
	Dental specialist	32 (94.1)	2 (5.9)		
13- Educational poster	Gender	Male	109 (84.5)	20 (15.5)	0.38
		Female	41 (78.8)	11 (21.2)	
	Participation in retraining courses	Yes	101 (85.6)	17 (14.4)	0.21
		No	49 (77.8)	14 (22.2)	
	Employment history (years)	< 15	82 (88.2)	11 (11.8)	0.07
		≥ 15	68 (77.3)	20 (22.7)	
Specialty	General dentist	121 (82.3)	26 (17.7)	0.80	
	Dental specialist	29 (85.3)	5 (14.7)		
14- Distance between the clients' seats	Gender	Male	125 (96.9)	4 (3.1)	> 0.99
		Female	51 (98.1)	1 (1.9)	
	Participation in retraining courses	Yes	115 (97.5)	3 (2.5)	> 0.99
		No	61 (96.8)	2 (3.8)	
	Employment history (years)	< 15	90 (96.8)	3 (3.2)	> 0.99
		≥ 15	86 (97.7)	2 (2.3)	
Specialty	General dentist	142 (96.6)	5 (3.4)	0.58	
	Dental specialist	34 (100)	0 (0)		
15- Removing all common equipment from the waiting room	Gender	Male	126 (97.7)	3 (2.3)	0.35
		Female	49 (94.2)	3 (5.8)	
	Participation in retraining courses	Yes	114 (96.6)	4 (3.4)	> 0.99
		No	61 (96.8)	2 (3.2)	
	Employment history (years)	< 15	90 (96.8)	3 (3.2)	> 0.99
		≥ 15	85 (96.6)	3 (3.4)	
Specialty	General dentist	141 (95.9)	6 (4.1)	0.59	
	Dental specialist	34 (100)	0 (0)		

Table 4. Investigating the distribution of the studied variables in the observance frequency of requirements 9 to 18 for the provision of dental services (continue)

Requirements	Variables		Yes [n (%)]	No [n (%)]	P
16- Periodical disinfection	Gender	Male	108 (83.7)	21 (16.3)	0.51
		Female	41 (78.8)	11 (21.2)	
	Participation in retraining courses	Yes	100 (84.7)	18 (15.3)	0.30
		No	49 (77.8)	14 (22.2)	
	Employment history (years)	< 15	77 (82.8)	16 (17.2)	> 0.99
		≥ 15	72 (81.8)	16 (18.2)	
	Specialty	General dentist	120 (81.6)	27 (18.4)	0.80
		Dental specialist	29 (85.3)	5 (14.7)	
17- Awareness of instructions	Gender	Male	110 (85.3)	19 (14.7)	> 0.99
		Female	45 (86.5)	7 (13.5)	
	Participation in retraining courses	Yes	100 (84.7)	18 (15.3)	0.82
		No	55 (87.3)	8 (12.7)	
	Employment history (years)	< 15	80 (86.0)	13 (14.0)	> 0.99
		≥ 15	75 (85.2)	13 (14.8)	
	Specialty	General dentist	126 (85.7)	21 (14.3)	> 0.99
		Dental specialist	29 (85.3)	5 (14.7)	
18- Personal protection	Gender	Male	122 (94.6)	7 (5.4)	> 0.99
		Female	50 (96.2)	2 (3.8)	
	Participation in retraining courses	Yes	111 (94.1)	7 (5.9)	0.49
		No	61 (96.8)	2 (3.2)	
	Employment history (years)	< 15	89 (95.7)	4 (4.3)	0.74
		≥ 15	83 (94.3)	5 (5.7)	
	Specialty	General dentist	138 (93.9)	9 (6.1)	0.21
		Dental specialist	34 (100)	0 (0)	

*Significance at the level of 0.05.

In a similar study, Ebrahimpour et al. investigated the knowledge and practice of dental students according to the infection control guidelines in the School of Dentistry, Mazandaran University of Medical Sciences, Sari. The mentioned study was conducted on 87 dental students.¹⁷ In their study, the knowledge of infection control in subjects was at a good level and the practice of the subjects was suitable for reasons such as the rules governing the units.¹⁷

In another study by Gaffar et al. on dentists' knowledge and practice regarding the MERS-CoV virus, 423 dentists in major cities of KSA completed a questionnaire on the MERS virus (transmission, consequences, and patient identification).¹⁸

In general, the subjects' knowledge of the training was at a good level. The best management was found in the management of identified patients. Finally, it was stated that educational programs should be considered due to the unique nature of dental practice.¹⁸ In this study, more dentists were

studied and their knowledge and information about MERS-CoV virus were investigated, while the observance frequency in dentists and their practice were not examined. The present study was conducted on another group of this virus, examined the observance frequency of health protocols, and compared general dentists and dental specialists in this regard. In a study, Baseer et al. investigated the awareness of precautions against droplets and particles released during dental work in the COVID-19 outbreak in Riyadh, KSA.¹⁹ In this study, there was a significant positive correlation coefficient between knowledge and attitude and between knowledge and practice. Finally, it was stated that dentists had good knowledge, positive attitude, and good practice in the face of droplets and particles formed during dental procedures in the MERS virus outbreak.¹⁹

In this study, another group of the coronavirus family known as MERS, was investigated, but in the present study, COVID-19 was examined. In addition, the

factor of knowledge was examined in the present study. Sabouhi et al. investigated the observance of some of the principles of cross-contamination control in dental treatment centers in Isfahan, Iran.²⁰ They found that the frequency of using goggles by dental specialists was significantly higher than that by general dentists. In the area of disinfection of tested prostheses in patients' mouths before sending them to the laboratory, dental specialists paid more attention to prosthetic disinfection compared to general dentists. Finally, infection control was found to be at a moderate level.²⁰ The health protocols and the questionnaires used in this study were different from those used in the study by Sabouhi et al., which ultimately led to different results.²⁰ However, similar to the present study, the observance frequency in dental specialists was significantly higher than that in general dentists.

The main limitations of the present study include a small sample size, nonblack of cooperation of some dentists, lack of similar studies, and thus, impossibility of comparing the results of this study with those of other studies.

Conclusion

In general, most of the dentists who participated in the present study observed health protocols. The highest frequency of observing requirements was related to observing the distance between the clients' seats, followed by high-pressure suction, a separate sterile disposable equipment package for each patient, and removal of all common equipment from the waiting room, respectively. The highest observance of the preferences was related to the preference of the use of one-way valves in the unit. Furthermore, most of the requirements were observed more by dental specialists compared to general dentists.

Conflict of Interests

Authors have no conflict of interest.

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