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Knowledge, Attitude, and Practice of Iranian Pedodontists Regarding Preventive Measures during the Covid-19 Pandemic

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Abstract

Objectives: This study aimed to assess the knowledge, attitude, and practice of Iranian pedodontists regarding preventive measures during the coronavirus disease 2019 (COVID-19) pandemic.
Methods: This cross-sectional study was conducted on 180 Iranian pedodontists. Data regarding their knowledge, attitude, and practice related to COVID-19 were collected through a valid and reliable researcher-designed questionnaire and analyzed using the independent t-test, analysis of variance (ANOVA), and Tukey test (alpha = 0.05).
Results: The majority of the participants were between 30 and 50 years old. The attitude and practice scores of participants aged over 50 were significantly higher than those of younger participants ($P < 0.05$). The majority of the participants were female, but the mean practice score of males was significantly higher than that of females ($P = 0.018$). The participants' mean knowledge, attitude, and practice scores had no significant association with their work experience or practice location ($P > 0.05$). The participants had a good level of knowledge regarding self-protection; however, they needed to update their knowledge.
Conclusion: The Iranian pedodontists' levels of knowledge, attitude, and practice were generally good, and they adhered well to the infection control protocols, social distancing measures, and taking thorough medical histories.
Keywords: COVID-19; Attitude; Knowledge; Professional practice

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Introduction

The novel coronavirus, known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first identified in Wuhan, China, in 2019 and quickly escalated into a pandemic due to its rapid transmission.[1] According to the latest statistics, it has affected around 624 million people worldwide and has resulted in about 6.5 million deaths.[2]

The emergence of the coronavirus disease 2019 (COVID-19) pandemic had a profound impact on dental education and practice. Numerous investigations were subsequently carried out regarding its etiology, epidemiology, routes of transmission, and effective protective measures for dental patients and dental clinicians.[3] Several measures were consequently proposed to minimize the risk of disease transmission, such as social distancing, avoiding crowded public areas, virtual education of dental students, and the use of personal protective equipment (PPE), such as face masks, gloves, goggles, shields, medical gowns/overalls, proper ventilation, performing dental procedures in isolated operatory rooms, and vaccination. Despite the proposed measures, dental offices, clinics, and schools were still among the areas with a high risk of disease transmission, and the optimal efficacy of such measures remained questionable.[4]

Due to close contact with patients, dental clinicians are at high risk of exposure to aerosols and droplets.[4] Therefore, they must adhere to the latest infection control protocols released by the American Dental Association (ADA) and the World Health Organization (WHO). All these protocols mainly emphasize the use of PPE and blocking the routes of disease transmission.[2] Since COVID-19 is often asymptomatic in children, pediatric dental patients can serve as asymptomatic carriers, putting pedodontists at higher risk of infection. Despite all the measures taken, COVID-19 can still occur, and there is a risk of mutation and the development of new peaks. Pedodontists can play a more prominent role in preventing COVID-19 by enhancing their knowledge.[5] Thus, this study aimed to assess the knowledge, attitude, and practices of Iranian pedodontists regarding preventive measures during the COVID-19 pandemic.

Methods

This cross-sectional study was conducted on 180 Iranian pedodontists practicing in Iran in 2022. The study protocol was approved by the university's Ethics Committee (IR.SBMU.DRC.REC.1400.111).

Inclusion Criteria

The inclusion criteria included pedodontists practicing in Iran during the study period, filling out the questionnaire, and signing informed consent form. According to reports from the Statistical Center of Iran, the total number of dental clinicians practicing in Iran is 25,000, of which,

4,000 are specialists and 1,000 are pedodontists. A total of 180 pedodontists were selected by the convenience sampling method for the present study.

Sample Size

The sample size was calculated to be 180 using the sample size calculation formula. In this formula, α-1 presents the confidence level, Z denotes the confidence coefficient, d indicates the estimation error around the unknown parameter of the mean, and σ is the variable standard deviation. Typically, the confidence level is 95%, i.e., α is equal to 0.05. Moreover, from the standard normal distribution table, Z is equal to 1.96. This calculation is essential for reporting the knowledge, attitude, and practice scores within a specific range (R) of 0-100, a standard deviation (σ) of 20, and an absolute error (d) of 3.[6]

$$n = \frac{Z^2_{1-\alpha/2} \times \sigma^2}{d^2}$$

σ=R/5=100/5=20

Data Collection

A researcher-designed questionnaire was used for data collection. The questionnaire designed by Khader et al [7] was initially used and slightly modified to match the study population. Next, the validity and reliability of the designed questionnaire were assessed. For validity assessment, three tables were used separately for knowledge, attitude, and practice questions. The content validity ratio (CVR) and content validity index (CVI) were calculated separately for each question. The CVR evaluated the necessity of each question, while the CVI assessed the relevance, clarity, and simplicity of each question using a 4-point scale. There were 12 attitude questions, out of which nine were scored; also, there were six knowledge questions, out of which five were scored, and 13 practice questions, out of which 12 were scored for inclusion in the final questionnaire. Four questions were omitted after validity assessment. Then, the paper print of the tables was provided to six pedodontists who were faculty members in Dental School, Shahid Beheshti University of Medical Sciences, for assessment. The results were tabulated in Excel software. To calculate the CVI, the number of pedodontists who selected choices 3 and 4 (the highest score for the respective item) for each item was divided by the total number of pedodontists. Values higher than 0.79 indicated an acceptable question. Values between 0.7 and 0.79 indicated the need for modification of the question, and values lower than 0.7 indicated the need for omission of the question. The following formula was used to calculate the CVR:

CVR=((ne-N⁄2))/(N⁄2)

Where N is the total number of pedodontists, and ne is the number of pedodontists who believed that the respective question was necessary. Accordingly, the acceptable value for each question based on the number of pedodontists (N = 6 here) was 0.99. Questions acquiring a lower value were omitted.

Cronbach's alpha was used to assess the reliability of the questionnaire. The Cronbach's alpha values for the knowledge segment, attitude segment, and practice segment were 0.841, 0.812, and 0.823, respectively, indicating that the questionnaire was well-structured and suitable for the selected population.

The designed questionnaire was uploaded on Porsline software, and its link was sent to the selected pedodontists via WhatsApp and Instagram. If no response was received, they were reminded through another message or by phone to fill out the questionnaire. The knowledge score of each participant was calculated by summing the item scores.

Statistical Analysis

The Independent t-test was used to analyze the association of knowledge, attitude, and practice scores with gender, while analysis of variance (ANOVA) was applied to analyze their association with age, work experience, and practice location. In addition, pairwise comparisons were performed using the Tukey test. All statistical analyses were conducted using SPSS version 25 (SPSS Inc., IL, USA) at a significance level of 0.05.

Results

Demographic Information

Table 1 presents the demographic information of the participants. The majority of the participants (81.1%) were female, and 76.7% were between 30 and 50 years old. 37.8% of participants had 5-10 years of clinical experience, and 67.2% had their own private practice. The participants were mainly from Tehran (50.5%).

Knowledge about Coronavirus Disease

Latency Period: A total of 32.8% of participants believed that the latency period of COVID-19 was 1 to 14 days, while 32.8% believed it to be 2 to 7 days (Table 2).

Symptoms: A total of 11.7% reported fever, cough, dyspnea, nasal discharge, and sore throat as the disease symptoms. Fever was the most commonly reported symptom mentioned by 163 pedodontists (Figure 1).

Taking a medical history: A total of 101 participants reported inquiring about COVID-19 in a family member and 13.3% reported inquiring about fever, sore throat, and illness in family members (Figure 2). Also, 47.2% reported asking about the patient's medical history when scheduling an appointment during the COVID-19 pandemic and its peaks (Table 2).

Updating Knowledge: A total of 43.3% of respondents reported updating their knowledge by visiting websites and social media and reading newly published articles and released protocols (Table 2).

Table 1- Demographic information of the participants

	Category	Number	Percentage	Cumulative percentage
Gender	Female	146	81.1	81.1
	Male	34	18.9	100.0
	Total	180	100.0	
Age groups	30-50 years	138	76.7	76.7
	>50 yrs.	31	17.2	93.9
	<30 yrs.	11	6.1	100.0
	Total	180	100.0	
Work experience	10-15 yrs.	24	13.3	13.3
	5-10 yrs.	68	37.8	51.1
	>15 yrs.	51	28.3	79.4
	<5 yrs.	37	20.6	100.0
	Total	180	100.0	
Location of practice	Private clinic	26	14.4	14.4
	Public clinic	33	18.3	32.8
	Private practice	121	67.2	100.0
	Total	180	100.0	

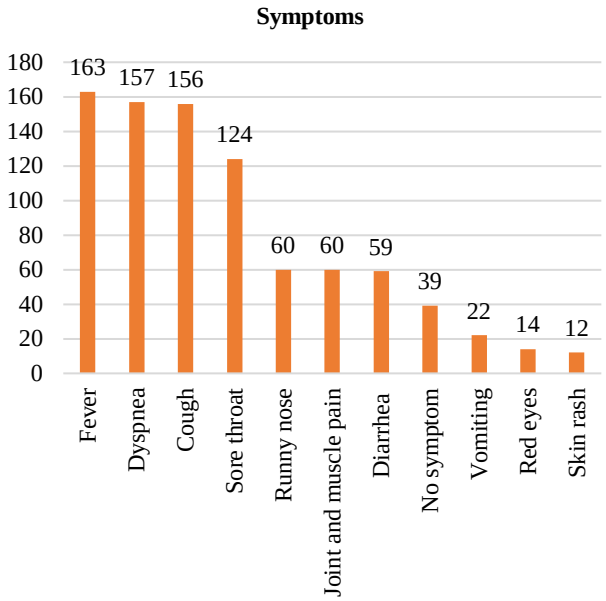

Figure 1: Frequency distribution of the reported symptoms by the participants

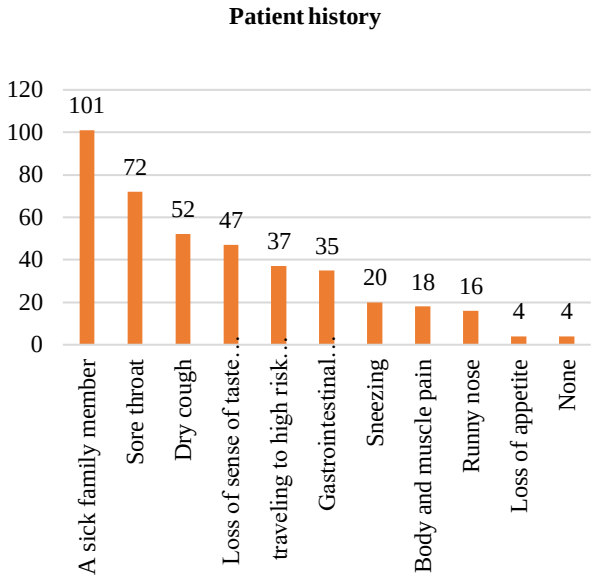

Figure 2: Frequency distribution of questions asked when taking a medical history

Table 2- **Knowledge of participants about different topics**

Variable	Category	Number	Percentage	Cumulative percentage
Latency period (days)	7-21	10	5.6	5.6
	7-14	52	28.9	34.4
	1-14	59	32.8	67.2
	2-7	59	32.8	100.0
Taking a history before scheduling an appointment	No	17	9.4	9.4
	Yes, during the entire pandemic	78	43.3	52.8
	Yes, during the peaks	85	47.2	100.0
	Others	6	3.3	3.3
Updating information	None	6	3.3	6.7
	Virtual groups	12	6.7	13.3
	Social media and websites	78	43.3	56.7
	Articles and guidelines	78	43.3	100.0

Moreover, most participants (55.6%) reported contacting the patients over the phone to inform them about the changes in their daily work hours.

The Association between Knowledge Score and Demographic Variables: The mean knowledge score was 9.29 ± 1.24 in males (N = 34) and 9.42 ± 1.29 in females (N = 146). This difference was not statistically significant (P = 0.594).

Attitude toward Treatment

Most participants (58.9%) preferred treating patients without COVID-19 symptoms, 24.4% reported providing emergency treatment to all patients, 13.9% reported treating all patients, and 2.8% reported no interest in working during the COVID-19 pandemic. Additionally, 70.6% had a positive attitude toward treatment.

Table 3 displays the measures taken by the participants when encountering patients. Among them, 53.3% reported sending the patients with high fever back home and advising them to quarantine themselves; 70.6% reported referring patients with high fever and respiratory symptoms of COVID-19 to medical centers, and 60.6% reported referring COVID-19 patients to medical centers.

As shown in Figure 3, 41.1% of the participants preferred extra-oral imaging to intra-oral imaging during the COVID-19 pandemic, and 53.9% reported only conducting emergency treatments during the peaks.

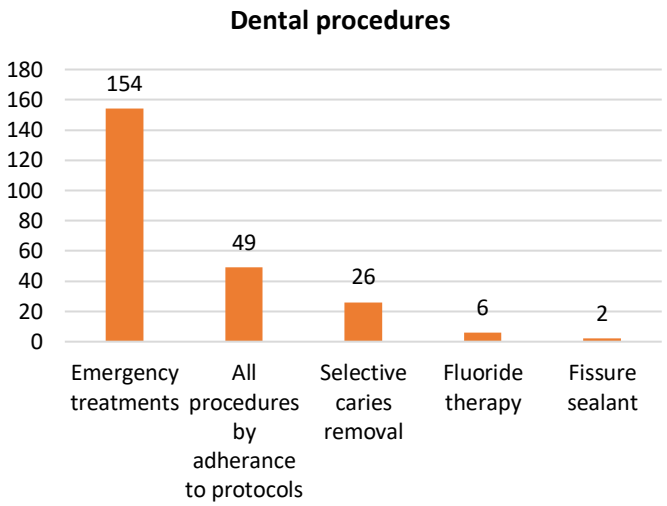

Figure 3: Frequency distribution of procedures undertaken by pedodontists during the pandemic

Table 3- Actions taken by the participants when encountering sick patients

Scenario and action taken		Number	Percentage	Cumulative percentage
What would you do when the patient has high fever but no other sign/symptom of COVID-19?	Guaranine and reporting to medical centers	4	2.2	2.2
	Referral to medical centers	80	44.4	46.7
	Sending the patient home and recommending quarantine	96	53.3	100.0
	Total	180	100.0	
What would you do when the patient has high fever and respiratory symptoms of COVID-19?	Guaranine and reporting to medical centers	15	8.3	8.3
	Sending the patient home and recommending quarantine	38	21.1	29.4
	Referral to medical centers	127	70.6	100.0
	Total	180	100.0	
What would you do when the patient has COVID-19?	Guaranine and reporting to medical centers	18	10.0	10.0
	Sending the patient home and recommending quarantine	53	29.4	39.4
	Referral to medical centers	109	60.6	100.0
	Total	180	100.0	

Moreover, 20.6% of participants believed that emergency treatments included the treatment of abscesses, cellulitis, acute pulpitis, bleeding, edema, trauma to permanent or primary teeth, temporary restoration loss, and acute apical periodontitis. Trauma was the most commonly reported emergency mentioned by 172 pedodontists (Figure 4).

The Association between Attitude Score and Demographics: The mean attitude score was 18.97 ± 3.32 in males and 19.55 ± 2.48 in females, showing no significant difference (P = 0.341).

As shown in Table 4, the attitude score was significantly different among the three age groups (P = 0.000), and pairwise comparisons revealed that the attitude score of individuals over 50 years was significantly higher than that of the other two groups (P = 0.001).

The mean attitude score was 18.43 ± 2.91 in individuals with less than five years of clinical experience, 19.61 ± 2.43 in individuals with 5-10 years of clinical experience, 19.62 ± 2.01 in individuals with 10-15 years of clinical experience, and 19.86 ± 2.91 in individuals with over 15 years of clinical experience. The difference in this regard was not significant among the different age groups (P > 0.05).

The mean attitude score was 19.47 ± 2.46 in individuals having their own private practice, 19.27 ± 2.80 in

individuals working in public clinics, and 19.53 ± 3.40 in individuals working in private clinics.

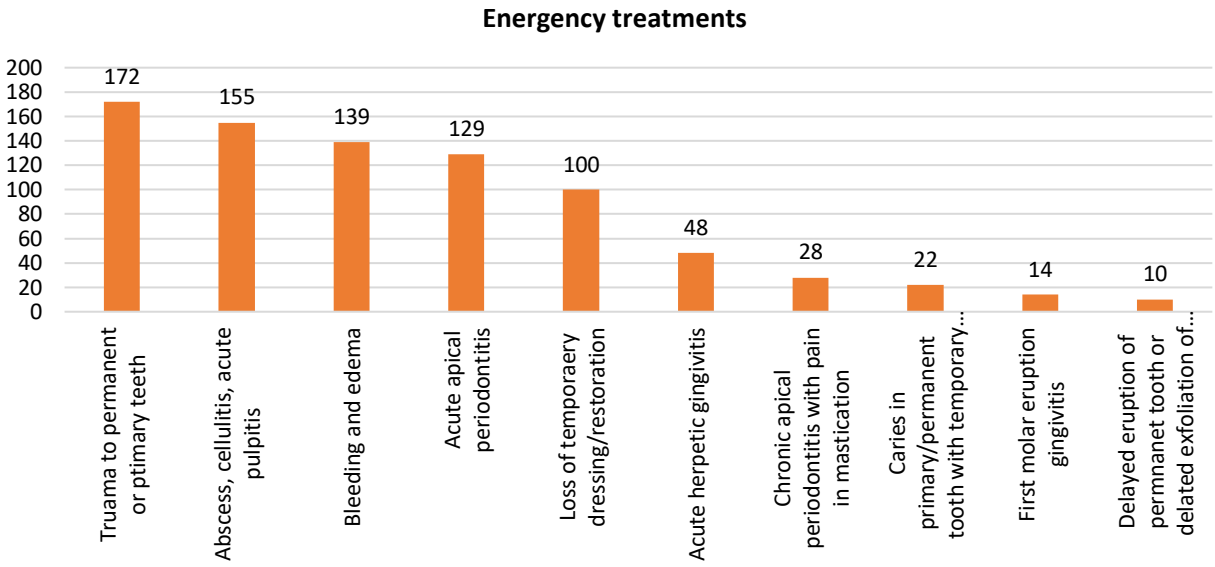

Figure 4: Frequency distribution of emergency treatments performed by pedodontists during the pandemic

Table 4- Mean attitude score in the three age groups and its pairwise comparisons

Age group	Number	Mean	Std. deviation	P value*	
< 30 years	11	17.90	2.38	30-50	0.245
				>50	0.001
30-50 years	138	19.19	2.67	<30	0.245
				>50	0.001
>50 yrs.	31	21.09	1.97	<30	0.001
				30-50	0.001

*One-way ANOVA followed by Tukey test

Practice

Disinfection: Most participants (72.8%) reported disinfecting all surfaces after treating each patient (Table 5).

Table 5- Frequency distribution of choices of pedodontists with respect to practice

Variable	Category	Number	Percentage	Cumulative percentage
Disinfection after each patient	Only surfaces in direct contact with patient	49	27.2	27.2
	All surfaces	131	72.8	100
Provision of preventive instructions	Other	16	8.9	8.9
	None	23	12.8	21.7
	Social media	47	26.1	47.8
	Over the phone	94	52.2	100.0
Using a mouthwash prior to the procedure	Yes, diluted betadine	4	2.2	2.2
	Yes, others	7	3.9	6.1
	Yes, 0.5% to 1% hydrogen peroxide	11	6.1	12.2
	Yes, chlorhexidine	39	21.7	33.9
	No	119	66.1	100.0

Preventive Instructions: A total of 52.2% reported providing preventive instructions and answering parents' questions over the phone (Table 5).

Social Distancing: A total of 45.6% implemented social distancing measures and increased the time interval between appointments. Specifically, 162 pedodontists reported extending the time between appointments.

Entertaining the Children in the Waiting Room: A total of 36.7% of participants reported showing movies and cartoons, playing music, and omission of toys from the waiting rooms to entertain the children and prevent their

contact with each other. Showing movies and cartoons, and playing music were reported by 114 pedodontists. Also, 72.2% of pedodontists allowed one or both parents to accompany the child in the operating room.

As shown in Figure 5, the pedodontists requested hand sanitization for patients and their companions, and provided face masks and shoe covers to them. Hand sanitization was the most commonly requested measure by 143 pedodontists.

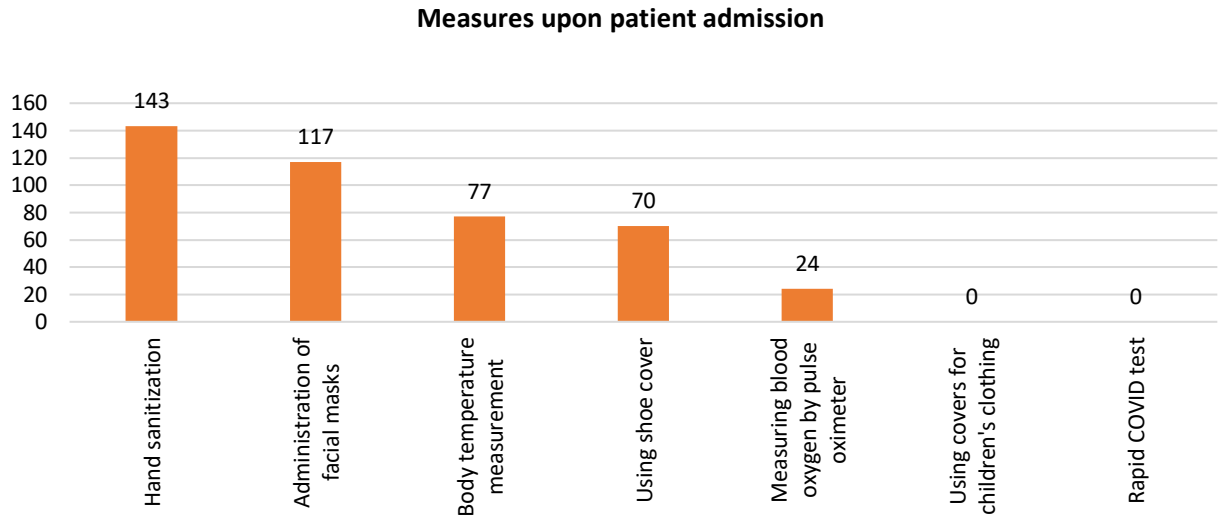

Figure 5: Preventive measures asked to be performed upon entering the office

Discussion

This study assessed the Iranian pedodontists' knowledge, attitude, and practices regarding preventive measures during the COVID-19 pandemic. Among the participants, 43.3% reported asking about the history of COVID-19 and symptoms, such as sore throat and dry cough in patients and their family members during the pandemic. However, 47.2% reported doing this only during the peaks. According to Al-Khalifa et al.'s study[6], 67% of the participants reported taking a medical history and inquiring about fever, cough, affliction of family members with COVID-19, nasal discharge, and sore throat. Duruk et al.[8] in Turkey found that only 4.24% of dentists in their study obtained a medical history from their patients and noted that fever, cough, and fatigue were the most common symptoms of COVID-19 according to the dentists' opinion. According to Arora et al.'s study[9], fever, dyspnea, and cough were identified as the most common symptoms of COVID-19 by dental clinicians. Additionally, dental clinicians demonstrated a relatively good level of knowledge about COVID-19 and were well-informed about the significance of early patient screening and social distancing.

In the present study, 52.2% of pedodontists provided preventive instructions to patients over the phone prior to their dental visit. This rate was 82.37% in Caggeti et al.'s study[10] in Italy and 50% in Al-Khalifa et al.'s study[7] in Saudi Arabia, which were close to the present results.

In the present study, the mean knowledge score of males and females was not significantly different, which contrasted with the findings of Almulhim et al.[11], reporting a higher level of knowledge among females. This discrepancy may be attributed to their evaluation of dental students. However, Srivastava et al.'s study[12] in Saudi Arabia identified a significant association between knowledge score and age, but no significant association between knowledge score and gender or practice location. Their results were in line with the present study findings. They found no significant association between attitude and practice scores and demographic variables; however, the present study indicated a significant association between attitude and age group. Discrepancies in these results may stem from variations in study populations.

In the present study, 43.3% of pedodontists reported updating their knowledge by reading recently published articles and released guidelines. The knowledge score of pedodontists in the current study showed no significant association with their work experience. In contrast, Almas et al.[5] reported a significantly higher knowledge score among dentists with over 10 years of clinical experience compared to those with less experience. This disparity may be because they evaluated general dentists in their study. Mustafa et al.[13] found a significant association between age and attitude, which was consistent with the findings of the present research. However, unlike the present study, they found no significant association between clinical experience and attitude score.

In the current study, 24.4% of pedodontists were willing to perform emergency treatments, and 58.9% were willing to perform selective treatments for patients without COVID-19 symptoms. Overall, 53.9% reported conducting emergency treatments only during the peaks, while 14.4% reported performing all types of procedures, which was against the guidelines.[14] Gambhir et al.'s research[15] in India reported that 8.5% of dentists performed emergency treatments for patients during the COVID-19 pandemic. In another study[8], 42.3% declared conducting emergency treatments only, and 12.3% reported providing all types of treatments during the COVID-19 pandemic. According to Khader et al.'s research[7] in Jordan, 50% of dentists reported referring symptomatic patients to medical centers. In the present study, 53.3% of pedodontists recommended quarantine for feverish patients with no other sign/symptom, and 60.6% declared referring COVID-19 positive cases to medical centers.

In the current research, abscess, cellulitis, acute pulpitis, bleeding, edema, trauma to primary and permanent teeth, temporary restoration loss, and acute apical periodontitis were considered emergency treatments by 20.6% of the participants. As shown in Karayürek et al.'s study[16], general dentists considered pulpal infection, abscess, pain, pericoronitis, and suture removal as emergency treatments.

A previous study reported that measuring the body temperature before dental procedures could help prevent disease transmission.[17] Also, in Al-Khalifa et al.'s study[6], 92% of dentists emphasized the importance of measuring patients' body temperature before dental procedures. However, only 77 pedodontists reported taking patients' body temperature before procedures, while 143 pedodontists (21.7%) focused only on hand sanitization for patients and their companions upon entering the office.

In the present study, 25% of the participants reported wearing a 3-layer or N95 face mask, shield, goggles, gowns, or overalls, and latex gloves as PPE, with the use of goggles and shields being the most commonly adopted measure. Duruk et al.'s study[8] in Turkey indicated that frequent hand washing, wearing latex gloves, and using 3-layer surgical face masks were the most common practices. Other studies have shown that most dental specialists completely adhere to PPE guidelines.[16,18]

By and large, 40.6% of the participants in the current study emphasized on the significance of proper ventilation and leaving the windows open. In Al-Khalifa et al.'s study[6], 38% of dentists used an isolated room, which was different from the present results.

Reduction of aerosol production can effectively decrease the risk of disease transmission.[19,20] In the current study, 21.7% of the participants reported using high-volume suction; this value was 63.79% in Duruk et al.'s research[8], which was close to the present study.

Karayürek et al.'s study[16] indicated that 69.6% of the participants recommended rinsing with mouthwash prior to dental procedures, while the majority of the current participants (66.1%) did not recommend it. Among those recommending mouthwash rinsing, 21.7% recommended using chlorhexidine. However, evidence shows that chlorhexidine alone cannot prevent viral infections, such as COVID-19.[21] This finding indicates a lack of knowledge among participants about the new guidelines.

In total, 67.2% of the current participants had their own private practice. Considering disease transmission through asymptomatic carriers, pedodontists took some measures to minimize contact of patients with each other; also, 45.6% reported both social distancing and increasing the time interval between the scheduled appointments. In Caggeti et al.'s study[10], 86% reported increasing the time interval between the appointments to decrease patient load in the office. According to Khader et al.'s research[7] in Jordan, 74.7% of dentists believed that the risk of disease transmission could be decreased by increasing the time interval between the appointments and decreasing the number of chairs in the waiting room. The same was reported by 73% of dentists in Al-Khalifa et al.'s study.[6] The aforementioned findings were consistent with the present results.

Surface disinfection after each patient has been recommended in the guidelines.[22] In the current study, 72.8% of pedodontists reported disinfection of all surfaces after each patient. In Gamhir et al.'s research.[15] one-third of the participants believed that surface disinfection once at the end of the day would suffice. However, consistent with the present results, 94.3% of the participants in Khader et al.'s research[7] declared regular surface disinfection.

Future studies are required on knowledge, attitude, and practices of other specialists regarding other diseases that can be transmitted through dental procedures.

Conclusion

The Iranian pedodontists demonstrated a good level of knowledge, attitude, and practice regarding Covid-19. They adhered well to the infection control protocols, social distancing measures, and taking thorough medical histories.

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Author Contributions: S.K. and A.S. conceived, designed and did statistical analysis editing manuscript**;** A.A. and N.M. and M.S. Did data collection and manuscript writing; M.K. Did overall supervision, final drafting and revision and final approval of manuscript.

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Ethical Approval Code:
The study protocol was approved by the university's Ethics Committee (IR.SBMU.DRC.REC.1400.111).

Informed Consent Statement: Not applicable.

Data Availability Statement: The raw data supporting of the cocclusion of this manuscript will be made available bye the authors,without undue reservation, to any qualified researcher.

Conflict of Interest: No Conflict of Interest Declared. ■

References

1. Naserghandi A, Allameh SF, Saffarpour R. All about COVID-19 in brief. New Microbes New Infect. 2020 Apr 13;35:100678. doi: 10.1016/j.nmni.2020.100678.
2. World Health Organization. COVID-19 Weekly Epidemiological Update Edition 115. published 26 October 2022. Available from: https://www.who.int/docs/default-source/coronaviruse/situation-reports/20221026_weekly_epi_update_115.pdf
3. Pournaghi Azar F, Hadilou M. Educational and Professional Challenges of Dentistry During Covid-19 Pandemic; a Literature Review. Depiction of Health. 2021;11(4):413-419.
4. Ahmed MA, Jouhar R, Ahmed N, Adnan S, Aftab M, Zafar MS, et al. Fear and Practice Modifications among Dentists to Combat Novel Coronavirus Disease (COVID-19) Outbreak. Int. J. Environ. Res. Public Health. 2020;17(8):2821.
5. Almas K, Khan AS, Tabassum A, Nazir MA, Afaq A, Majeed A. Knowledge, Attitudes, and Clinical Practices of Dental Professionals during COVID-19 Pandemic in Pakistan. Eur J Dent. 2020;14(S 01):S63-9.
6. Al-Khalifa KS, AlSheikh R, Al-Swuailem AS, Alkhalifa MS, Al-Johani MH, Al-Moumen SA, et al. (2020) Pandemic preparedness of dentists against coronavirus disease: A Saudi Arabian experience. PLoS ONE 15(8): e0237630
7. Khader Y, Al Nsour M, Al-Batayneh OB, Saadeh R, Bashier H, Alfaqih M, et al. Dentists' Awareness, Perception, and Attitude Regarding COVID-19 and Infection Control: Cross-Sectional Study Among Jordanian Dentists. JMIR Public Health Surveill. 2020;6(2):e18798.
8. Duruk G, Gümüşboğa ZŞ, Çolak C. Investigation of Turkish dentists' clinical attitudes and behaviors towards the COVID-19 pandemic: a survey study. Braz Oral Res. 2020;34:e054.
9. Arora S, Saquib SA, Attar N, Pimpale S, Zafar KS, Saluja P, et al. Evaluation of Knowledge and Preparedness Among Indian Dentists During the Current COVID-19 Pandemic: A Cross-Sectional Study. J Multidiscip Healthc. 2020;13:841-54.
10. Cagetti MG, Cairoli JL, Senna A, Campus G. COVID-19 Outbreak in North Italy: An Overview on Dentistry. A Questionnaire Survey. Int J Environ Res Public Health. 2020; 17(11):3835.
11. Almulhim B, Alassaf A, Alghamdi S, Alroomy R, Aldhuwayhi S, Aljabr A, et al. Dentistry Amidst the COVID-19 Pandemic: Knowledge, Attitude, and Practices Among the Saudi Arabian Dental Students. Front Med (Lausanne). 2021; 8:654524.
12. Srivastava KC, Shrivastava D, Sghaireen MG, Alsharari AF, Alduraywish AA, Al-Johani K, et al. Knowledge, attitudes and practices regarding COVID-19 among dental health care professionals: a cross-ectional study in Saudi Arabia. J Int Med Res. 2020;48(12):300060520977593.
13. Mustafa RM, Alshali RZ, Bukhary DM. Dentists' Knowledge, Attitudes, and Awareness of Infection Control Measures during COVID-19 Outbreak: A Cross-Sectional Study in Saudi Arabia. Int J Environ Res Public Health. 2020;17(23):9016.
14. Alsaleh MM, Sabbarini JM, Al-Batayneh OB, Khader YS. Changes in Behavior Management and Treatment Modalities in Pediatric Dentistry during COVID-19 Pandemic. Int J Clin Pediatr Dent. 2020;13(Suppl 1):S125-31.
15. Gambhir RS, Dhaliwal JS, Aggarwal A, Anand S, Anand V, Bhangu AK. Covid-19: a survey on knowledge, awareness and hygiene practices among dental health professionals in an Indian scenario. Rocz Panstw Zakl Hig. 2020;71(2):223-9.
16. Karayürek F, Çırakoğlu NY, Gülses A, Ayna M. Awareness and Knowledge of SARS-CoV-2 Infection among Dental Professionals According to the Turkish National Dental Guidelines. Int J Environ Res Public Health. 2021;18(2):442.
17. Consolo U, Bellini P, Bencivenni D, Iani C, Checchi V. Epidemiological Aspects and Psychological Reactions to COVID-19 of Dental Practitioners in the Northern Italy Districts of Modena and Reggio Emilia. Int J Environ Res Public Health. 2020;17(10):3459.
18. Tysiąc-Miśta M, Dziedzic A. The Attitudes and Professional Approaches of Dental Practitioners during the COVID-19 Outbreak in Poland: A Cross-Sectional Survey. Int J Environ Res Public Health. 2020;17(13):4703.
19. Samaranayake LP, Reid J, Evans D. The efficacy of rubber dam isolation in reducing atmospheric bacterial contamination. ASDC J Dent Child. 1989;56(6):442-4.
20. Meng L, Hua F, Bian Z. Coronavirus disease 2019 (COVID-19): emerging and future challenges for dental and oral medicine. J Dent Res. 2020; 99(5):481-7.
21. Carrouel F, Conte MP, Fisher J, Gonçalves LS, Dussart C, Llodra JC, Bourgeois D. COVID-19: A Recommendation to Examine the Effect of Mouthrinses with β-Cyclodextrin Combined with Citrox in Preventing Infection and Progression. J Clin Med. 2020; 9(4):1126.
22. World Health Organization. Clinical management of severe acute respiratory infection when novel coronavirus (nCoV) infection is suspected, Interim guidance. 2020; 2020.