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Investigation of the clinical behaviors of pediatric dentists working in Turkey during the normalization period of the COVID-19 Pandemic

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Abstract

Objective: Our aim is to investigate the clinical attitudes and behaviors of pediatric dentists during the new normalization period of the COVID-19 pandemic.

Materials and methods: Our study was conducted online among pediatric dentistry specialists working in Turkey and a total of 256 people participated. According to personal information, the six questions asked in the second part were analyzed in terms of physicians' adaptation to the new normal order, clinical arrangements, measures to be taken, and their approaches to treatment procedures.

Results: The responses to the option "my anxiety has decreased and I have learned to live with this situation" were mostly found in women (42.86%), those with a working period of 1-5 years (42.11%) and pediatric dentists aged 20-25 years (42.86%). In our study, it was observed that ART was practiced more in public hospitals (100%) compared to university and private hospitals. It was observed that 73.91% of pediatric dentists working in university hospitals preferred panoramic films. This rate was significantly higher than those working in state and private hospitals.

Conclusions: It was observed that the pediatric dentists participating in our study acted in accordance with the precautions and measures during the new normalization period. In this process, procedures that produce less aerosol were preferred more frequently.

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Introduction

Coronaviruses are enveloped RNA viruses that are widely distributed among birds, humans, and other mammals and cause liver, respiratory, enteric and neurological diseases (1). In late December 2019, several local health facilities in Wuhan, People's Republic of China, reported that there were groups of patients with pneumonia of unknown caus, and that the causative agent of pneumonia was a novel coronavirus (2019-nCoV) strain that was epidemiologically linked to the seafood sales market and had not previously been seen in humans (1). The most important difference between SARS-CoV-2 compared to other coronavirus strains is the long spike protein. This long protein of SARS-CoV-2 recognizes Angiotensin Converting Enzyme 2 (ACE2) as the main receptor binding point in the host. Therefore, cells with ACE2 receptor production can be considered in the potentially high-risk group regarding virus infection (2). SARS-CoV-2 infection is airborne by aerosols produced during medical treatments, and exposure to high concentrations of aerosols in an enclosed space is a potential route of transmission (3). Among all healthcare professionals, the highest potential for infection has been reported for dentists, dental assistants, and dental hygienists, as they are in close contact with patients and exposed to patient secretions, saliva and aerosol splash (4). According to the circular published on 30 May 2022 by the Ministry of Interior of the Republic of Turkey; it is important to continue the measures during the normalization period entered with the removal of the use of masks from compulsory use in order to control the infection. Our study aims to investigate the clinical attitudes and behaviors of pediatric dentists during the new normalization period of the COVID-19 pandemic.

Materials and methods

This study was conducted within the scope of "Dicle University Faculty of Dentistry Local Ethics Committee Decisions" with the approval of the board numbered 2022-31. Our study was conducted online via Google Form among pediatric dentists working as specialist pediatric dentists in state hospitals, private practices, or university hospitals in Türkiye and research assistants studying in the specialty of pediatric dentistry in dental faculties on a voluntary basis. The questionnaire consists of 5 personal information questions and six clinical behavior questions. In the "Personal Information" section, demographic information such as gender, age, duration of working in the profession, title, and the institution in which they work was questioned. In the second part, questions were included to investigate the clinical behaviors of physicians. According to personal information, the six questions asked in the second section were analyzed one by one in terms of physicians' adaptation to the new normal order, clinical arrangements, measures to be taken, and their approach to treatment procedures.

Statistical analysis

The data obtained in this study were analyzed with the licensed IBM SPSS 21 package program. Chi-Square analysis was applied when examining the relationships between groups of nominal variables. In 2x2 tables, Fisher's Exact Test was used in cases where the expected values in the cells did not have sufficient volume, and in RxC tables, Pearson Chi-Square analysis was applied with the help of Monte Carlo Simulation. (*Since 20% of the expected value in the cells was less than 5, chi-square analysis was performed with the help of Monte Carlo Simulation.) When interpreting the results, 0.05 was used as the significance level; In the case of $p<0.05$, it is stated that there is a significant relationship and in case of $p>0.05$, it is stated that there is no significant relationship.

Results

A total of 256 pediatric dentists participated in the survey. Of the participants, 67 (26.17%) were male and 189 (73.83%) were female. 21 (8.2%) of the participants were between the ages of 20-25, 120 (46.88%) between the ages of 26-30, 71 (27.73%) between the ages of 31-40 and 44 (17.19%) were 40 years and older. In terms of working years in the profession, 133 (51.95%) of the participants were between 1-5 years, 49 (19.14%) between 6-10 years and 74 (28.91%) were 11 years or more. Of the participants, 120 (46.88%) were research assistants, 60 (23.44%) were specialist pediatric dentists, 40 (15.63%) were assistant professors, 16 (6.25%) were associate professors and 20 (7.81%) were professors. Of the participants, 24 (9.38%) work in public hospitals, 48 (18.75%) in private hospitals and 184 (71.88%) in university hospitals.

When the level of anxiety about contracting COVID-19, the first question of the questionnaire, was analyzed by gender, 17.91% of men and 42.86% of women reported that their anxiety decreased ($p=0.001$). Examination of anxiety levels according to age, duration of working in the profession and the organization ofworkg are shown

in **Tables 1, 2 and 3.** The second question of our study, the extent to which COVID-19 negatively affects the cooperation of pediatric patients, is shown in Table 4. In our study, statistically significant correlations were observed between the third question, questioning of overseas contact among the precautions taken by pediatric dentists for their patients, the use of mouthwashes containing 1% hydrogen peroxide and 0.2% povidone iodine before dental procedures and various personal data ($p<0.05$). Inquiries about overseas contact were made by 35.82% of men and 21.69% of women according to gender. Significant differences were found between those who worked between 6-10 years (38.78%) and those who worked 11 years or more (17.57%) ($p=0.029$). According to the working organization, a significant difference was found between those working in a state hospital (45.83%) and those working in a university hospital (22.28%) ($p=0.043$). According to gender, 28.36% of men and 13.23% of women use 0.2% of povidone iodine mouthwash before dental procedures. Use of 1% hydrogen peroxide as a mouthwash before dental procedures Statistically significant differences were found between those with a working period of 1-5 years (4.51%) and those with 6-10 years (18.37%) ($p=0.008$). In our study, a statistically significant correlation was found between the fourth question, the change in the patient admission system, and gender, age and length of service ($p<0.05$). According to gender, 44.78% of men and 41.8% of women ($p=0.038$) reported that they reduced the number of patient admissions. Tables 5 and 6 show the relationship between age and duration of working in the profession.

In our study, significant correlations were found between ART application, silver diamine fluoride application, temporary therapeutic applications, Hall technique and resin infiltration application and various personal data among the answers given to the fifth question, 'Which of the minimally invasive treatment procedures with less aerosol production would you prefer' ($p<0.05$). A statistically significant difference was observed between those working in public hospitals (100%) and those working in private hospitals (58.33%) who preferred ART ($p=0.001$). There was a statistically significant difference between research assistants (12.5%) and assistant professors (40%) who used the resin infiltration technique ($p=0.006$). There were statistically significant differences in the use of interim therapeutic restorations between pediatric dentists with 6-10 years of practice (59.18%) and those with 11 years or more (35.14%) ($p=0.009$) and between pediatric specialists (33.33%) and associate professors (62.5%) ($p=0.049$). There were statistically significant differences in silver diamine fluoride application between 20-25 years of age (9.52%) and 31-40 years of age (39.44%) ($p=0.048$) and between 1-5 years (22.56%) and 6-10 years (42.86%) ($p=0.022$). According to gender, 38.81% of men and 25.93% of women reported that they preferred silver diamine fluoride application. In our study, significant relationships were found between various personal data regarding the use of Bite-wing, panoramic, periapical, CBCT, which are the films used in radiologic evaluation, which is the sixth question ($p<0.05$). A significant difference was found between specialist pediatric dentists (8.33%) and associate professors (50%) regarding the use of Bite-wing films ($p=0.001$). Regarding the use of panoramic films, significant differences were observed between those working in private hospitals or practices (47.92%) and those working in university hospitals (73.91%) ($p=0.002$).

Statistically significant differences were observed in the use of periapical films between research assistants (72.5%) and specialist pediatric dentists (48.33%) ($p=0.018$) and between those working in state hospitals (41.67%) and those working in university hospitals (68.48%) ($p=0.003$). There were statistically significant differences in the use of CBCT between those working 1-5 years (4.51%) and those working 6-10 years (18.37%) ($p=0.005$) and between those working in public hospitals (20.83%) and those working in private hospitals (4.17%) ($p=0.032$).

Table 1: Examination of the first question according to age ranges

		Age				
		20-25 years	26-30 years	31-40 years	40 years and over	
		%	%	%	%	*p*-value
As one of the occupational groups with the highest risk of COVID-19 infection, how concerned are you that you will be infected?	I'm not worried about it at all. I'm going back to my old routine.	0	5	4.23	4.55	**0.014**
	My anxiety decreased and I started to learn to live with it.	42.86	40.83	28.17	34.09	
	I am very afraid and extremely worried about catching the virus.	4.76	3.33	7.04	0	
	I am worried about the virus being transmitted to my family/relatives through me.	33.33	25.83	11.27	13.64	
	Although I have some concerns from time to time, I continue by taking the necessary precautions.	19.05	25	49.3	47.73	
	Total	100	100	100	100	

Table 2. Examination of the first question according to the duration of work in the profession

		Duration of work in the profession			
		1-5 years	6-10 years	11 years and over	
		%	%	%	*p*-value
As one of the occupational groups with the highest risk of COVID-19 infection, how concerned are you that you will be infected?	I'm not worried about it at all. I'm going back to my old routine.	3.76	8.16	2.7	**0.001**
	My anxiety decreased and I started to learn to live with it.	42.11	22.45	35.14	
	I am very afraid and extremely worried about catching the virus.	2.26	14.29	0	
	I am worried about the virus being transmitted to my family/relatives through me.	27.07	1.,29	12..16	
	Although I have some concerns from time to time, I continue by taking the necessary precautions.	24.81	40.82	50	
	Total	100	100	100	

Tablo 3. Examination of the first question according to the organization worked in

		Working organization			
		State hospital	Private		
		%	%	%	*p*-value
As one of the occupational groups with the highest risk of COVID-19 infection, how concerned are you that you will be infected?	I'm not worried about it at all. I'm going back to my old routine.	0	4.17	4.89	**0.002**
	My anxiety decreased and I started to learn to live with it.	20.83	37.5	38.04	
	I am very afraid and extremely worried about catching the virus.	20.83	4.17	1.63	
	I am worried about the virus being transmitted to my family/relatives through me.	29.17	12.5	21.2	
	Although I have some concerns from time to time, I continue by taking the necessary precautions.	29.17	41.67	34.24	
	Total	100	100	100	

Table 4. Examination of the second question according to the organization worked in

		Working organization			
		State hospital	Private hospital	University hospital	
		%	%	%	*p*-value
To what extent do you think COVID-19 negatively affects the cooperation of pediatric patients during dental treatment?	Not affected	8.33	39.58	20.11	**0.042**
	to a small effect.	41.67	22.92	36.96	
	Moderately affected.	37.5	33.33	36.41	
	Largely affected.	12.5	4.17	6.52	
	Total	100	100	100	

Table 5. Examination of the fourt question according to age ranges

		Years				
		20-25 years	26-30 years	31-40 years	40 years and over	
		%	%	%	%	*p*-value
What changes have you made to your patient admission system?	I didn't make any changes.	57.14	35.83	38.03	47.73	**0.032**
	I only take emergency patients.	9.52	5	0	9.09	
	I reduced the number of patients.	23.81	44.17	45.07	43.18	
	I increased the number of patients.	9.52	15	16.9	0	
	Total	100	100	100	100	

Table 6. Examination of the fourt question according to the duration of work in the profession

		Duration of work in the profession			
		1-5 years	6-10 years	11 years and over	
		%	%	%	*p*-value
What changes have you made to your patient admission system?	I didn't make any changes.	40.6	34.69	43.24	**0.032**
	I only take emergency patients.	6.02	0	5.41	
	I reduced the number of patients.	40.6	40.82	47.3	
	I increased the number of patients.	12.78	24.49	4.05	
	Total	100	100	100	

Discussion

This virus, called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a new type of coronavirus isolated from patients with pneumonia of unknown etiology in Wuhan city, is easily transmitted from person to person. Therefore, the World Health Organization (WHO) declared a pandemic on March 11, 2020 (5). In our survey study, we investigated and evaluated the adaptation of pediatric dentists working in Turkey to this process, changes in treatment procedures and the measures they have taken during and after the new normalization period in which the negative effects of the pandemic continue. In a study on the level of anxiety about contracting COVID-19, it was reported that the stress and anxiety levels of men were significantly lower than those of women (6). In a survey study conducted by Şahin et al. among healthcare workers, a significant relationship was found in terms of anxiety in women, those between the ages of 18-25 and those with a working period of less than ten years (7). In a study conducted in Switzerland, it

was reported that the proportion of dentists who did not feel stressed while treating a patient during the pandemic period was higher (8). In our study, it was found that women's anxiety decreased statistically significantly in the new normal period compared to men and they started to learn to live with this situation (p=0.001). When analyzed according to age ranges, it was observed that physicians aged 20-30 years had significantly less anxiety compared to physicians aged 30 years and older (p=0.014). Although those with a working period of 1-5 years had less anxiety than those with a longer working period, they were more anxious about transmitting the virus to their families through themselves. Physicians working in private hospitals or private practices reported that they felt anxiety from time to time significantly more than physicians working in other institutions, but that they continued to work by taking the necessary precautions (p=0.002). We believe that the widespread application of vaccines developed against COVID-19 to physicians and the reporting of results, such as high effects on new variants, effectively reduce anxiety.

It is very important to take anamnesis from patients before the procedure and to take measures to reduce transmission. Duruk et al. reported that 36.47% of the participants used 0.2% povidone iodine and 15.42% used 1% hydrogen peroxide as a mouthwash before the procedure (10). In a study by Koç et al. 72.2% of the participants questioned the travel history of the patients and their relatives (11). In another study conducted in Saudi Arabia, 68.4% of the participants used rubber dam during the epidemic period. In the same study, 97.5% of physicians with a working period of 10 years or more stated that they took the patient's temperature before the procedure (12). When the preprocedure mouthwash use of the pediatric dentists participating in the study was analyzed according to gender, it was observed that 28.36% of males and 13.23% of females used 0.2% povidone iodine mouthwash (p=0.008). The use of 1% hydrogen peroxide as mouthwash was found to be 18.37% in those with a working period of 6-10 years (p=0.008). The questioning of foreign contact was found to be significantly higher among males, those with a working period of 6-10 years, and those working in state hospitals and ADSMs. The use of 0.2% povidone iodine before the procedure was significantly higher than the other groups using it as mouthwash. We think that this is due to the fact that povidone iodine mouthwash is easier to access and has been a preferred preparation for disinfection and sterilization for a long time.

With the new normalization period, appointment times and durations should be planned by considering adequate disinfection and ventilation procedures in the clinical environment (13). This may lead to a decrease in the number of patient admissions. In a study, participants reported that they preferred to reduce the number of patient admissions (8). In our study, a statistically significant correlation was observed between the change made in the patient admission system and gender, age and time worked (p<0.05). According to gender, males, those aged between 31-40 years and those who have been working 11 years or more in the profession reported a significantly higher rate of decreasing the number of patient admissions.

Minimally invasive treatment practices that produce less aerosol have come to the fore during the pandemic. In their study, Alsaleh et al. reported that ART (52.1%) and GDF (28.9%) in India and Hall Technique (26.8%) and ART (25%) in Jordan were applied during the pandemic period because they produced less aerosol (14). Another study also shows that there was an increase in the application of Hall technique and ART during the pandemic period. In the same study, it was reported that GDF was more effective in stopping caries in deciduous teeth than topical fluoride application and ART (15). Masri et al. reported the rate of GDF and Hall technique use as 20.3% in their study (16). In our study, it was found that ART was applied at a significantly higher rate in state hospitals (p=0.001). It was observed that physicians working between 6-10 years in the profession and associate professors preferred ITR application at a significantly higher rate. GDF application was significantly more common in the 31-40 age group (39.44%) (p=0.048). We believe that treatment procedures, especially ART, are more commonly used in this process and that the fact that these applications contain less aerosol plays a role in this preference.

During the COVID-19 pandemic period, extraoral radiographs should be preferred over intraoral radiographs during radiologic evaluation (17). Moheb et al. reported that 62% of dentists preferred extraoral radiographs instead of intraoral radiographs during the pandemic (18). In another study by Ammar et al. on the subject, this rate was reported as 60% (19). Masri et al. reported the use of panoramic films as 66.7% in their study (16). In another study conducted in Turkey, most of the participants stated that they preferred the use of panoramic films (11). It was observed that 73.91% of pediatric dentists working in a university hospital preferred panoramic films. This rate was found to be significantly higher than those working in public and private hospitals (p=0.002). Bite-wing film use was statistically more preferred by associate professors (p=0.001). CBCT was significantly

more preferred by those working between 6-10 years in the profession and those working in state hospitals. In our study, panoramic film was statistically the most preferred imaging method. We believe that this is due to the fact that extraoral imaging techniques are preferred more in terms of transmission risk.

Conclusions

As a result of the data obtained from our study, the participants who stated that their anxiety levels decreased were found to be statistically significantly higher in women, under 30 years of age and pediatric dentists with a working period between 1-5 years.

In our study, it was found that ART was significantly more common in state hospitals (p=0.001). Studies with larger participant populations are needed to investigate the clinical attitudes and behaviors of pediatric dentistry, other specialties and general practitioner dentists in this process. In addition, inspections and training regarding precautions and measures in this process should be increased.

Conflict of interest:

The authors report no conflict of interest.

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Research concept and design: **AMC, ECT**
Data analysis and interpretation: **AMC**
Collection and/or assembly of data: **AMC, ECT**
Writing the article: **AMC**
Critical revision of the article: **AMC, ECT**
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