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Coronavirus Disease 2019 Pandemic Management Performance of 4 Different Orthodontic Health-Care Institutions Held by Public, Private, and Foundation Systems in Turkey: A Preliminary Study

Türkiye'de Kamu, Özel ve Vakıf Sistemi Tarafından Yönetilen 4 Farklı Ortodontik Tedavi Hizmeti Sunan Kurumun Coronavirus 19 Pandemi Yönetim Performansı: Bir Ön Çalışma

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ABSTRACT

Objective: This article presents a comparison of the coronavirus disease 2019 pandemic management activities between different health-care institutions providing orthodontic treatment services.

Methods: Patients from 1 public university, 1 oral and dental health center affiliated to the Ministry of Health, 1 foundation university, and 2 private dental practices in Bursa and Bolu were asked to complete a questionnaire about the problems they experienced with their ongoing treatments during the coronavirus disease 2019 quarantine process. Descriptive statistics with percentages were performed, and the institutions were compared in terms of their performance in managing the pandemic process based on the answers.

Results: The questionnaire was answered by 1108 people. The comparisons between institutions revealed the superiority of private practices in appointment arrangement frequency by having appointments within 1 month by 19.8%, in communication skills with 4.04 mean value, and in anxiety management by 3.08 mean value of anxiety frequency about treatment elongation when evaluated with a 5-point Likert scale. The rate of not being informed about pandemic management was highest in foundation universities.

Conclusion: The quarantine and coronavirus disease 2019 pandemic showed to have an impact on orthodontic treatments. In private practices, the patient–doctor interaction was more effective. Private practices have the lowest anxiety levels. Only private practices used video calls for communication. Doctors in filiation applications had an important role in the overall welfare of the people. However, this operation had a deteriousle impact on orthodontic appointments and treatment options.

Keywords: COVID-19, delivery of health care, orthodontics

ÖZ

Amaç: Bu makale, ortodontik tedavi hizmeti veren farklı sağlık kurumları arasındaki COVID-19 pandemi yönetimi faaliyetlerinin bir karşılaştırmasını sunmaktadır.

Yöntemler: 1 devlet üniversitesi, Sağlık Bakanlığı'na bağlı 1 ağız ve diş sağlığı merkezi (ADSM), 1 vakıf üniversitesi ve Bursa ve Bolu'daki 2 özel ortodontist muayenehanesinde tedavi gören hastalardan COVID-19 karantina sürecinde devam eden tedavilerinde yaşadıkları sorunlar hakkında bir anket doldurmaları istendi. Deskriptif istatistikler yapıldı ve kurumlar, verilen yanıtlara göre pandemi sürecini yönetmedeki performansları açısından karşılaştırıldı.

Bulgular: Anket 1108 kişi tarafından yanıtlandı. Kurumlar arası karşılaştırmalar, özel muayenehanelerin rutin aylık kontrolleri gerçekleştirebilme oranının %19,8 olduğunu; 5'li Likert ölçeğine göre iletişim becerilerinde 4,04, tedavinin sürecinin uzamasına yönelik kaygı yönetimi başarısında 3,08 ortalama değeri ile üstünlüğünü ortaya koydu. Pandemi yönetimi konusunda bilgilendirilmeme oranı vakıf üniversitelerinde en yüksek bulundu.

Sonuç: Karantina ve COVID-19 pandemisinin ortodontik tedavileri etkilediği gösterildi. Özel muayenehanelerin hasta-doktor etkileşiminde daha etkin olduğu, özel kliniklerde tedavi gören hastaların en düşük kaygı düzeyine sahip olduğu ortaya çıktı . Görüntülü iletişim yolunu yalnızca özel muayenehaneler kullandı. Filiasyon uygulamalarında doktorlar, halkın genel refahında önemli bir role sahipti. Ancak bu uygulamanın ortodontik randevuları ve tedavi seçeneklerini olumsuz etkilediği ortaya kondu.

Anahtar Kelimeler: COVID-19, sağlık hizmeti, ortodonti

INTRODUCTION

Coronavirus disease 2019 (COVID-19) pandemic is a worldwide public health crisis, and dental proficiency is one of the highest risk areas for COVID-19 contamination, considering the hazards associated with aerosol-generating procedures.[1] At the beginning of the pandemic, orthodontists struggled to balance their own safety with their duty to their patients.[2] Turkey's first case of COVID-19 has been confirmed on March 11, 2020.[3] In Turkey, as a first response to the pandemic, the Ministry of Health regulatory authorities has ordered an obligatory postponement of all nonemergent procedures with the inclusion of orthodontic treatments on March 27 and updated the regulations on April 1. According to the COVID-19 advisory guideline of the Ministry of Health, emergent treatment services for orthodontics are defined as "cutting or removing the brackets and the archwire causing ulcerations of the oral mucosa and/or infections" and "application of feeding plate to newborns with cleft lip and palate."[4]

In Turkey, orthodontic health-care services are maintained by public and private providers. While public orthodontic care service is provided through the government by national health-care systems in public university hospitals and oral and dental health centers (ODHC), private health care is maintained by private hospitals or self-employed practitioners and private nonprofit foundation universities.

In Turkey, orthodontic patients were treated by both postgraduate orthodontic specialists and postgraduate students. A graduate dentist who wants to be a specialist can continue their postgraduate education via 2 programs: specialization and doctorate program. However, while graduate students who continue specialization education program are entitled as research assistants and paid by the government, doctorate (Ph.D.) students are not. In Turkey's universities, orthodontic treatment service is generally maintained by Ph.D. students and research assistants under the supervision of an authorized faculty member. On March 13, the Republic of Turkey Council of Higher Education Board stated the universities would be closed within the scope of COVID-19 measures, and these regulations would be valid for Ph.D. students as well. These restrictions were not inclusive for authorized academic staff and research assistants. Also, on March 20, most specialists working for ODHC were assigned within the scope of the filiation applications to find and determine the source of the COVID-19 cases and protect the well-being of positive cases, including people who have had contact with the positive patients.[5,6] Thus, these specialists could not provide orthodontic treatment services for a long time. During this period, all institutions used circumstance-specific protocols. While some closed down completely, some continued to provide emergency services only, and some provided a combination of treatments at the practice and remote sessions. Hereby, patients who received orthodontic treatment services from different institutions were also affected at different rates.

Health institutions aim to provide equal, fair, and high-quality services to all parts of society. Measurements for efficiency, quality, and satisfaction that are made during an emergency will reveal the current condition and possible solution methods.

Accordingly, the current study aims to evaluate the public and private sector performances preliminarily, under the light of the questionnaire results obtained from four different institutions across the key domains of management of the pandemic. The null hypothesis is "There was no difference between the institutions in terms of pandemic management activities."

MATERIAL AND METHODS

This study was approved by the Biruni University Ethics Committee (Date: 28.05.2020, Number: 40-28).

During the quarantine measures, a questionnaire form consisting of 11 questions, 3 of them (Q1, 2, 3) were demographic and 8 of them (Q4-Q11) were related to the pandemic process, on the basis of systematic literature review and through discussions with clinicians to be answered by the orthodontic patients (Table 1).

A Google Forms questionnaire (Google LLC, Mountain View, Calif, USA) was sent to 2200 patients who were being treated at 1 public university, 1 oral and dental health center affiliated to the Ministry of Health (ODHC), 1 foundation university, and 2 private dental practices in Bursa and Bolu in Turkey. Patients being sent the form were not considered whether they were treated by a faculty member or Ph.D. students or research assistants. However, all patients in ODHC and private practices were treated by a specialist. The link for the questionnaire was sent by WhatsApp Messenger (WhatsApp Inc., Menlo Park, Calif, USA). Consent was obtained from the families of the patients who were under 18 years of age.

Participators were asked about demographic information, whether or not their orthodontist informed them about pandemic management and their ongoing orthodontic treatment, and if they have gotten in contact with their doctor in case of a problem with their treatments—if yes—which communication tool they have used, whether or not the orthodontist has managed to solve their problem remotely, and how long it took to get an appointment at the practice. Also, participants were asked if they have consulted another orthodontist in case of an

Table 1. Questionnaire Applied to Orthodontic Patients

Q1: What is your gender?
( ) Male
( ) Female
Q2: How old are you?
( ) 6-12 years
( ) 12-18 years
( ) 18-36 years
( ) 36 years and above
Q3: In which institution does your orthodontic treatment continue?
( ) Public university
( ) Foundation university
( ) Private clinic
( ) Oral and dental health centers affiliated to the Ministry of Health
Q4: How long did you not get an appointment during the COVID-19 pandemic?
( ) 0-1 month
( ) 1-1.5 months
( ) 1.5-2 months
( ) 2-2.5 months
( ) 2.5-3 months
( ) 3 months and above
Q5: During the COVID-19 pandemic process, did you go to a health institution for urgent treatment?
( ) Yes
( ) No
Q6: Have you been able to contact your doctor when you needed it?
( ) I did not find any need to contact my doctor
( ) Never
( ) Rarely
( ) Sometimes
( ) Often
( ) Always
Q7: If you were able to contact your doctor, was your doctor able to solve your problem? (If you did not find any need to contact your doctor at all, please skip this question.)
( ) No answer
( ) Never
( ) Rarely
( ) Sometimes
( ) Often
( ) Always
Q8: How did you mostly contact your doctor during the COVID-19 pandemic process? (If you did not find any need to contact your doctor, you can skip this question.)
( ) No answer
( ) I have not managed to contact my doctor
( ) SMS
( ) WhatsApp
( ) Social media
( ) Videoconference
Q9: Have you gotten help from another orthodontist/dentist to solve your problem apart from your own doctor during the COVID-19 pandemic? (If you did not need any help, please skip this question.)
( ) Yes
( ) No
Q10: Did your doctor inform you about pandemic management?
( ) Yes
( ) No
Q11: Have you ever worried about the prolongation of your treatment process?
( ) Never
( ) Rarely
( ) Sometimes
( ) Often
( ) Always

COVID-19, coronavirus disease 2019; SMS, short message service.

emergency and how worried they were about the elongation of their treatments. The questionnaire was available to complete from June 1 to July 1, until the beginning of "back to work policy." A 5-point Likert scale was performed for the sixth, seventh, and 11th questions.

Statistical Analysis

Responses were obtained and tabulated in Microsoft Excel (Microsoft, Redmond, Wash, USA) for statistical analysis. Descriptive statistics were performed for Q1, 2, 3. The Shapiro–Wilk test was applied to test the normality of distribution and *P* was found to be >.05. Thus, nonparametric tests were performed.

The comparison of behaviors between 4 institutions were analyzed with Fisher's exact test for Q4 and 5 and Q8, 9, 10 and Kruskal–Wallis and Mann–Whitney *U*-test were used for Q6, 7, and 11. Statistical analysis was performed with MedCalc statistical software, Version 12.7.7. A value of $P < ,05$ was considered statistically significant. Post hoc power analysis was performed using the online ClinCalc post hoc power calculator.

RESULTS

Among the 2200 patients who were sent the questionnaire, 1108 people answered the questionnaire. The response rate was 50.36%. 5.4% of participants' ages were between 6 and 12 years, that of 37.5% were between 12 and 18 years, that of 50.4% were between 18 and 36 years, and that of 6.7% were 36 years and over (Q1). Most of the patients were female (Q2). The distribution of patients' treatment institutions was as follows: 464 in private practices (41.9%), 397 in public university (35.8%), 199 in foundation university (18%), and 48 in ODCH (4.3%) (Q3) (Table 2).

When comparative statistics were evaluated, there was a statistically significant difference in terms of the distribution of all parameters according to the institution providing treatment service (Table 3).

The comparison between institutions revealed that private practices were the easiest to create appointments, and they had significantly higher rates of making an appointment for emergencies within 1 month. Similarly, they had the smallest rate of postponing appointments for more than 3 months (Q4). 10.75% of all participants reported going for an emergency appointment during quarantine measures. The rate of patients requiring an emergency appointment was lower in private practices (Q5). The rate of those who could not contact their doctor during quarantine measures was highest in foundation university when compared with private practices and public university (Table 3). The percentage of those who stated that they could contact their doctor was not significantly different between the rest (Q6) (Table 4). When asked if the treatment provider was able to solve the problem that was faced, the answers revealed similar results of satisfaction for all institutions, with a significantly lower rate in the foundation university (Table 4). The most chosen answer was "My problem was always solved" option, with a significantly important dominance among all possible answers (Q7). While the most frequently used tool was telephone (38.1%) and WhatsApp (28.8%), social media (0.5%) and videoconference (0.6%) were the most rarely used methods to communicate (data not shown on tables). The use of WhatsApp was high at the foundation university, while the public university,

Table 2. Demographics of Respondents

		N	%
Gender	Male	330	29.8%
	Female	778	70.2%
Age	6-12 years	60	5.4%
	12-18 years	416	37.5%
	18-36 years	558	50.4%
	36 years and above	74	6.7%
Institution	Public university	397	35.8%
	Oral and dental health center affiliated to Ministry of Health	48	4.3%
	Foundation university	199	18.0%
	Private practice	464	41.9%

Table 3. A Comparative Analysis of National COVID-19 Pandemic Management Performance in Turkey

		Public University		Oral and Dental Health Center Affiliated to Ministry of Health		Foundation University		Private Practice		
		N	%	N	%	N	%	N	%	*P*
How long did you not get an appointment during the COVID-19 pandemic? (Q4)	0-1 month	7	1.8%	2	4.2%	6	3.0	92	19.8%	**<001**
	1-1.5 months	14	3.5%	5	10.4%	1	0.5	29	6.3%	
	1.5-2 months	23	5.8%	5	10.4%	5	2.5	93	20.0%	
	2-2.5 months	39	9.8%	6	12.5%	23	11.6	101	21.8%	
	2.5- 3 months	116	29.2%	8	16.7%	67	33.7	81	17.5%	
	3 months and more	198	49.9%	22	45.8%	97	48.7	68	14.7%	
During the COVID-19 pandemic process, did you go to a health institution for urgent treatment? (Q5)	Yes	51	12.8%	5	10.4%	16	8.0%	31	6.7%	**.019**
	No	346	87.2%	43	89.6%	183	92.0%	433	93.3%	
Have you been able to contact your doctor when you needed it? (Q6)	I did not find any need to contact my doctor	34	8.6%	7	14.6%	29	14.6%	56	12.1%	**<.001**
	Never	173	43.6%	23	47.9%	53	26.6%	188	40.5%	
	Rarely	30	7.6%	4	8.3%	30	15.1%	21	4.5%	
	Sometimes	34	8.6%	2	4.2%	15	7.5%	43	9.3%	
	Often	41	10.3%	2	4.2%	26	13.1%	27	5.8%	
	Always	85	21.4%	10	20.8%	46	23.1%	129	27.8%	
		Mean ± SD		**Mean ± SD**		**Mean ± SS**		**Mean ± SD**		***P****
		Med. (Min-Max)		**Med. (Min-Max)**		**Med. (Min-Max)**		**Med. (Min-Max)**		
		3.89 ± 1.43		4 ± 1.4		3.22 ± 1.5		4.04 ± 1.3		**<.001**
		5 (1-5)		5 (1-5)		3 (1-5)		5 (1-5)		
If you were able to contact your doctor, was your doctor able to solve your problem? (If you did not find any need to contact your doctor at all, please skip this question.) (Q7)	Not replied	214	53.9%	22	45.8%	113	56.8%	302	65.1%	**.001**
	Never	18	9.8%	2	7.7%	11	12.8%	17	10.5%	
	Rarely	13	7.1%	0	0.0%	5	5.8%	6	3.7%	
	Sometimes	13	7.1%	1	3.8%	12	13.9%	9	5.5%	
	Often	20	10.9%	3	11.5%	21	24.4%	27	16.6%	
	Always	119	65.0%	20	76.9%	37	43.0%	103	63.6%	
		Mean ± SD		**Mean ± SD**		**Mean ± SD**		**Mean ± SD**		***P****
		Med. (Min-Max)		**Med. (Min-Max)**		**Med. (Min-Max)**		**Med. (Min-Max)**		
		4.14 ± 1.37		4.5 ± 1.14		3.79 ± 1.39		4.19 ± 1.32		**.004**
		5 (1-5)		5 (1-5)		4 (1-5)		5 (1-5)		
How did you mostly contact your doctor during the COVID-19 pandemic process? (If you did not find any need to contact your doctor, you can skip this question.) (Q8)	Not replied	65	16.4%	9	18.8%	66	33.2%	115	24.8%	**<.001**
	I have not managed to contact my doctor	0	0%	0	0%	0	0%	0	0%	
	SMS	62	15.6%	1	2.1%	11	5.5%	25	5.4%	
	Social media	3	0.8%	1	2.1%	1	0.5%	1	0.2%	
	Phone call	156	39.3%	21	43.8%	49	24.6%	196	42.2%	
	Videoconference	0	0.0%	0	0.0%	0	0.0%	7	1.5%	
	WhatsApp	111	28.0%	16	33.3%	72	36.2%	120	25.9%	
Have you gotten help from another orthodontist/dentist to solve your problem apart from your own doctor during the COVID-19 pandemic? (If you did not need any help, please skip this question.) (Q9)	Not replied	147	37.0%	26	54.2%	80	40.2%	214	46.1%	**.005**
	Yes	20	5.0%	2	4.2%	13	6.5%	9	1.9%	
	No	230	57.9%	20	41.7%	106	53.3%	241	51.9%	
Did your doctor inform you about pandemic management? (Q10)	Yes	270	68.0%	33	68.8%	89	44.7%	302	65.1%	**<.001**
	No	127	32.0%	15	31.3%	110	55.3%	162	34.9%	
Have you ever worried about the prolongation of your treatment process? (Q11)	Never	56	14.1%	8	16.7%	18	9.0%	105	22.6%	**<.001**
	Rarely	38	9.6%	10	20.8%	13	6.5%	82	17.7%	
	Sometimes	98	24.7%	12	25.0%	48	24.1%	119	25.6%	
	Often	92	23.2%	4	8.3%	48	24.1%	74	15.9%	
	Always	113	28.5%	14	29.2%	72	36.2%	84	18.1%	
		Mean ± SD		**Mean ± SD**		**Mean ± SD**		**Mean ± SD**		***P****
		Med. (Min-Max)		**Med. (Min-Max)**		**Med. (Min-Max)**		**Med. (Min-Max)**		
		3.57 ± 1.35		3.42 ± 1.52		3.84 ± 1.22		3.08 ± 1.47		**<.001**
		4 (1-5)		3 (1-5)		4 (1-5)		3 (1-5)		

P < ,05 Fisher's exact test.
COVID-19, coronavirus disease 2019; Med., median; Min-Max, minimum–maximum; SMS, short message service; SS, sum of squares.
* *P* <.05 Kruskal–Wallis test.

private practices, and ODHC contacted patients mostly by phone. Videoconferencing was not used for communication purposes in any institution other than private practices (Q8). The rate of patients stating that they got help from another orthodontist/dentist to solve their problem—because they needed help—was the highest with patients receiving treatment at the foundation university and lowest in private practices. Participants stating that they have not gotten any help from another dentist/orthodontist was highest at the public university (Q9). During the COVID-19 pandemic, the rate of not being informed about pandemic management was highest in the foundation university (Q10). With this questionnaire, the level of anxiety of the respondents was also evaluated. When the anxiety levels about the delay of ongoing treatment of all participants were checked overall, the anxiety levels were listed as follows: 25.5%: always present; 19.7%: frequently present; 20.3%: sometimes present; 7.7%: rarely present; and 16.9% never present (data not shown on tables). Foundation university patients had the highest and private practice

Table 4. Post Hoc Comparison of Q6-Q7 and Q11

	P		
Post Hoc Pairwise Comparisons	**Q6**	**Q7**	**Q11**
Public university vs. private practice	.356	.993	**<.001**
Public university vs. oral and dental health center affiliated to Ministry of Health	.600	.202	.641
Public university vs. foundation university	**<.001**	**.005**	.035
Private practice vs. oral and dental health center affiliated to Ministry of Health	.899	.191	.172
Private practice vs. foundation university	**<.001**	**.004**	**<.001**
Oral and dental health center affiliated to Ministry of Health vs. foundation university	**.005**	**.005**	.152

P <.008 Mann–Whitney *U*-test (Bonferroni correction).

patients had the lowest rate of anxiety about elongation of their treatment duration (Q11).

The calculated power for this study according to post hoc pairwise comparisons in terms of Q6 and Q7 of ODHC was found to vary between 92.7% and 95.9%. The calculated power being greater than 80% indicated that the sample size is sufficient for the study.

DISCUSSION

In Turkey, orthodontics is a recognized dental specialty, and orthodontic treatments are primarily held by these specialists. According to the latest published data, there are 52 public universities, 661 ODHC, 14 foundation universities, and 10 775 private practices.[7-9] Even if all institutions tried to follow the restrictions and guidance as precisely as possible, differences in action to some extent are inevitable. Thus, this present study aims to shed light on this subject. It is the first detailed survey study comparing pandemic management activities of different health-care institutions providing orthodontic treatment services. At an unprecedented time such as a worldwide pandemic, an online web-based survey is beneficial in terms of producing large amounts of data in a relatively short period of time for a fairly low cost. Thus, it provides a wide view of how things are at a specific era.[10] Using this advantage, our study managed to reach a large sample size, collected data from various regions of the country, and had a homogeneous age and gender distribution.

When the comparative differences between different institutions were examined, there were results worth addressing. According to Hancock et al's study,[11] there was a significant difference between private and public care in terms of the speed of getting an appointment. Our study showed parallel results. Private practice patients were able to arrange emergency appointments more easily compared to others. The first reason for the private practices being more accessible may be due to the Ph.D. students' responsibility of providing treatment was not active because of the regulations. Secondly, this may be related to the disadvantage the ODHC had. Since the treatment providers at the ODHCs were assigned to work for "COVID-19 filiation applications," they were not able to provide treatment service to their continuing orthodontic patients.

The study about the impact of the COVID-19 pandemic on appointments revealed that 25.1% of patients would attend an appointment only in case of emergency. The percentage of patients who required an emergency appointment in our study was lower than that reported in Cotrin et al's[12] results. In addition, the present study allowed for a comparison between institutions and showed the rate of patients requiring emergency appointments were significantly lower in private practices. The significant difference of shorter intervals between appointments in private practices can be the reason for this result as continuing to have regular visits will decrease the necessity for emergency appointments.

The systematic review by Basu et al[12] on the comparative performance of private and public health-care systems concluded that the private sector is not superior to the public sector in terms of efficiency. However, the public sector appears frequently to lack timeliness and hospitality toward patients. Our findings indicated that the inability of participants to reach their doctors was notably more prevalent at Foundation University, while the differences in this aspect between other institutions were not statistically significant. This observation provides partial corroboration to the earlier mentioned systematic review. The variation in communication frequency can be attributed to the regulations applied on Ph.D. students in foundation universities, which restrict them from serving healthcare services and canalize them to pursue their education online. Actually, the same situation was valid for the Ph.D. students in public universities, as well. However, in contrast to foundation universities, most of the Ph.D. students in public universities are appointed as academic staff. Government regulations required the academic staff to work without any permission to have a leave of absence or to quit because of these particular circumstances of COVID-19. Contrary to all these factors, the highest rate of not being informed about pandemic management shows that this specific university could not manage this situation well. It is not appropriate to generalize this finding to all foundation universities. The next aspect was highly related to the previous one. We were curious about the ability to solve the encountered problems if a communication was possible to be made. Findings showed us similarity between differences in institutions in terms of availability and creating contact. After contact, patients considered their problems to be solved in all institutions except in the foundation university, with a significantly lower rate of solutions to problems. Still, it should be noted that even though there was a significant difference in the comparison between institutions, the ability to solve problems was high in foundation the university, as well. These two findings support each other. Both suggest that communication is a key domain and doctor–patient relationship is the most essential contributing factor to patient fulfillment.[13]

Not only communication but also the communication method is also significant. Remote communication methods prevent spread of the virus by reducing the physical contact between doctors and patients.[14] In this perspective, the utilization of innovative communication tools including phone calls, videoconferencing, messaging via WhatsApp or social media, and e-mails to maintain long-distance care draws attention as an effective opportunity for face-to-face service.[15,16] Petruzzi et al[18] confirmed the use of WhatsApp as a good option for teledentistry. Guidice et al[19] reported that using WhatsApp for monitoring patients limits human contact and decreases the risk of virus dissemination. Currently, WhatsApp is the most commonly used application.[20] Consistent with these reports, in the present study, the most used communication tools during the quarantine measures were the phone and WhatsApp. Videoconferencing was used only by private practices and was the least preferred tool among all the communication utilities. This may be due to the poor resolution of imaging.

As our data revealed, the patients being treated at the foundation university had the highest rate of getting help from outside

institutions. This may be due to the previously mentioned restrictions in Q7. This situation contributes to our understanding of the reason for the rate of getting help from other institutions being the lowest at the public university. The second reason may be economical. The study about the utilization of dental services suggests that the Turkish health insurance system is mainly based on government plans, and this prevents people from using relatively expensive private dental services.[21] We believe that the possibility of public university patients hesitating to seek help from other institutions may be due to their economic status. Finally, the rate of those who got help from another orthodontist/dentist to solve their problem—because they needed help—being lowest at private practices may be due to private practices being able to maintain their routine appointment schedules.

A study that compares public and private hospital care service quality in Turkey shows a lack of communication between the patients and the hospital personnel in Turkish public hospitals.[22] Consistently, this present study showed that doctors in private practices informed patients about pandemic management more than in other institutions. This higher rate of communication could be justified by the private sector being keen on providing a better quality service to be able to compete with the market.[22]

According to a study about the factors affecting duration of orthodontic treatment, every missed appointment tends to elongate the treatment by 1.09 months.[23] This is a predictable outcome and patients usually are able to make this assumption and get worried about the prolongation of treatment process. Peleso et al[23] reported that 48.7% of orthodontic patients worried about delays in their treatment. When the proportion of participants stating "always and often experiencing anxiety about the delay in treatment" were evaluated together, our results were 45.2%. Thus, they are compatible with the aforementioned study. Furthermore, the present study compared anxiety levels among patients between institutions. Foundation university patients had the highest anxiety rate about elongation of treatment duration. Also, as previously discussed, the foundation university had the lowest rate of adequately informing patients. We believe these two findings may be associated with each other and lack of communication may have resulted with the high rate of anxiety.

Evaluating overall, the null hypothesis was rejected, and findings showed that there were differences between pandemic management activities between institutions. Also, our study was not free of problems: First, the participants whose treatments were continuing in different institutions were not represented in equal numbers, and this caused a weakness in homogeneity. If participation to the survey were similar from each health care institution, different findings could have been obtained. Secondly, although the sample size of the study is not small, the number of institutions where the patients received treatment is not enough to make a general assumption. Advantages and disadvantages may be specific to the institutions where the research was conducted. However, despite the limited data, this work provides a preliminary snapshot of the pandemic management activities of different health-care institutions in Turkey by being the study with the largest sample size on the matter so far. Still, for more comprehensive results, further studies are needed.

The quarantine measurements have had an impact on treatment-providing institutions and patients. The research presented here confirms that the relationship between patient and doctor in private practices was more dynamic in terms of communication about pandemic management. In addition to that, the slightest anxiety level was identified in private practices as well. Communication by video calls was only existent in private practices. Although orthodontic procedures were influenced contrarily by filiation applications, specialists in this methodology served a valuable role in the prosperity of general society overall. Ease of communication and having regular appointments stand out as a critical dimension in service quality. There was a negative correlation between pandemic management by adequately informing patients and anxiety levels. A continuum of periodic appointments showed to decrease anxiety. In view of all that has been mentioned so far, one way supposes that creating safe ways to continue patients' treatments under every possible circumstance is important.

Ethics Committee Approval: This study was approved by the Biruni University Ethics Committee (Date: 28.05.2020, Number: 2020/40-28).

Informed Consent: Patients were informed that answering the questionnaire before replying the questionnaire means that they consented to participate to the study.

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