

How Has the COVID-19 Pandemic Revised the Daily Practices of Orthopedics and Traumatology Physicians in Turkey?

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ABSTRACT

Aim: The rapid spread of COVID-19 infection around the world has integrated some precautions and restrictions. In this new period, disruptions and re-prioritizations were experienced in medical practices. The aim of this study is to reveal the changes in the outpatient clinics and surgical services in the practice of Orthopedics and Traumatology in Turkey from the perspective of both residents and specialist physicians with a survey study.

Materials and Methods: In order to evaluate the changes, a survey was prepared which had consisted 42 and 45 questions for residents and specialist working in Turkey, respectively. The survey was published online between December 6, 2020 and January 31, 2021. Data analysis were performed by dividing into 4 subgroups: 1) Demographic information, 2) Changes in internal tasking and working conditions, 3) Variety of services provided and changes in patient applications, 4) Changes in the health care delivery process.

Results: From all over Turkey 62 residents and 230 specialists participated in the survey. 80.4% (185) of the specialists participating in the study and 96.8% (60) of the residents were working in the pandemic hospital. During the pandemic, it was determined that the working hours of physicians were reduced by almost half, and also there was a decrease in the variety and quantity of elective cases. Furthermore, it was observed that the number of applications to emergency services and outpatients clinics decreased during this period. In addition to increased neglected trauma cases, increment of treatment rejection rates are among the observed results.

Conclusion: During the pandemic period, it is observed that there are significant disruptions in orthopedics and traumatology health care delivery and training processes. In the light of experiences, it is crucial to prepare health service action plans for other possible pandemic situations or new waves of COVID-19 due to mutations.

Keywords: Turkey, COVID-19, changes, health care delivery, pandemic

COVID-19 Pandemisi Türkiye'de Ortopedi ve Travmatoloji Hekimlerinin Günlük Uygulamalarını Nasıl Değiştirdi?

ÖZET

Amaç: COVID-19 enfeksiyonunun dünya çapında hızla yayılması, bazı önlemleri ve kısıtlamaları beraberinde getirmiştir. Bu yeni dönemde, tıbbi uygulamalarda aksamlar ve yeniden önceliklendirmeler yaşanmıştır. Bu çalışmanın amacı, Türkiye'de Ortopedi ve Travmatoloji pratiğinde poliklinik ve cerrahi hizmetlerindeki değişimi anket çalışması kullanılarak hem asistan hem de uzman hekimlerin görüşleriyle ortaya koymaktır.

Yöntem: Yaşanan değişiklikleri değerlendirmek için Türkiye'de asistan ve uzman hekimlere sırasıyla 42 ve 45 sorudan oluşan bir anket hazırlandı. Anket, 6 Aralık 2020 ile 31 Ocak 2021 tarihleri arasında çevrimiçi olarak yayımlandı. Veri analizi 4 alt gruba ayrılarak yapıldı: 1) Demografik bilgiler, 2) Hizmet içi görevlendirme ve çalışma koşullarındaki değişiklikler, 3) Sağlanan hizmetlerin çeşitliliği ve hasta uygulamaları, 4) Sağlık hizmeti sunum sürecindeki değişiklikler.

Sonuçlar: Ankete Türkiye'nin her yerinden 62 asistan ve 230 uzman hekim katıldı. Araştırmaya katılan uzmanların %80,4'ü (185) ve asistanların %96,8'i (60) pandemi hastanesinde çalışıyordu. Pandemi sürecinde hekimlerin çalışma saatlerinin neredeyse yarı yarıya azaldığı, elektif vakaların çeşit ve sayısında da azalma olduğu belirlendi. Ayrıca bu dönemde acil servislere ve polikliniklere başvuruların azaldığı gözlemlendi. İhmal edilen travma vakalarının artmasının yanı sıra tedavi reddi oranlarının artması da gözlenen sonuçlar arasındadır.

Çıkarım: Pandemi döneminde ortopedi ve travmatoloji sağlık hizmeti sunum ve eğitim süreçlerinde önemli aksaklıklar olduğu görülmektedir. Deneyimler ışığında, olası diğer pandemi durumları veya mutasyonlar nedeniyle yeni COVID-19 salgın dalgaları için sağlık hizmeti eylem planlarının hazırlanması büyük önem taşımaktadır.

Anahtar Kelimeler: Türkiye, COVID-19, değişiklikler, sağlık hizmeti sunumu, pandemi

With the rapid spread of Sars-CoV-2 infection (COVID-19) around the world, many precautions and restrictions have begun to be taken in public and individual areas. Due to the increasing number of patients with COVID-19, reductions in outpatient services and delays in elective surgeries have begun in many countries, and the concept of “new normal” has been gained (1-6).

In Turkey, especially during the peak periods of the pandemic process, hospitals have almost been turned into COVID-19 care centers. Physicians working in these centers started to work actively in this process, regardless of their specialties. In addition, in order for healthcare professionals to protect their own health, flexible working arrangements were introduced in line with hospital needs, and different application systems were developed outside of routine working hours.

The hypothesis of this study is that the outpatient-clinics and inpatient-clinics in the field of Orthopedics and Traumatology decreased in Turkey in the early period during the COVID-19 pandemic process. The aim of this study is to reveal the changes in the practice of Orthopedics and Traumatology in Turkey with a survey study. In addition, the modifications in the daily practices were also investigated.

Material and Methods

In order to evaluate the changes, a survey that named as “What has the COVID-19 Pandemic revised in Orthopedics and Traumatology Practice?” was prepared. The questionnaire had consisted of 42 and 45 questions for residents and specialist, respectively. The survey was planned to include no patient information in the collected data. Written approval was obtained from the Ministry of Health of the Republic of Turkey due to the study related to the pandemic period. Ethics committee approval was obtained for this study from the Local Ethics Committee (no: 2020/3). The questionnaire was prepared using Google Forms® (<https://docs.google.com/forms>).

A total of 83 questions were divided into 3 groups: Demographic information and professional experience were examined with Part-A (Q:1-5). Part-B (Q:6-45) was customized for specialist, and Part-C (Q:46-83) was for residents. These questions were divided into subgroups: 1) Demographic information, 2) Changes in internal tasking and working conditions, 3) Variety of services provided and changes in patient applications, 4) Changes in the health care delivery process.

The survey was published online on December 6, 2020. It was shared in the e-mail group network of Turkish Orthopedics and Traumatology physicians. Data collection was carried out between 6 December 2020 and 31 January 2021. Participants who could not take an active role in the pandemic process due to personal issues such as health problems were not included in the evaluation.

Results

Sixty-two residents and 230 specialists participated in the survey. Fifty-three of the specialists were in charge of departments. It was seen that the participants were from different geographical region (Figure 1).

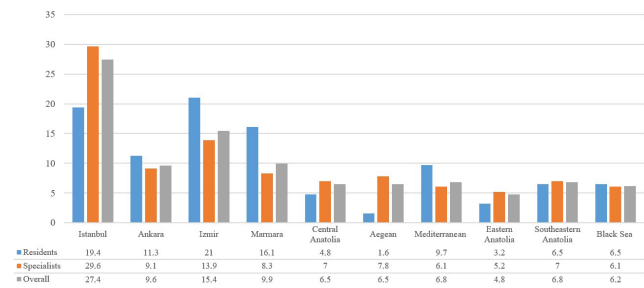


Figure 1. Geographical distribution of participants (%). Istanbul, Ankara and Izmir are not included in their geographical region

In the pandemic hospital, 80.4% (185) of the specialists and 96.8% (60) of the residents were working. During the pandemic, the working hours of residents and specialists were reduced by almost half compared to the pre-pandemic period. The changes in the duties, working conditions and hours of the participants in work areas associated with the COVID-19 are given in Tables 1 and 2 in detail. It was also reported by the participants that the number of monthly night shifts of residents decreased during the pandemic (Figure 2).

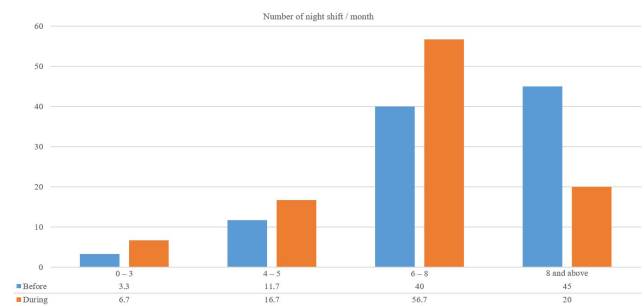


Figure 2. Monthly night shift change graph of residents before and during the pandemic (%)

Table 1. The duties and working conditions of the participants working in the pandemic service units

n (%)	Residents (n=60)		Specialists (n=185)	
	Yes	No	Yes	No
Have you worked in the outpatient clinic for COVID-19 suspected patients?	26 (43.3)	34 (56.7)	61 (33.0)	122 (65.9)
Have you worked in the follow-up and treatment unit for patients with COVID-19 infection?	21 (35.1)	38 (63.3)	55 (29.7)	129 (69.7)
Are necessary precautions taken in terms of the risk of contamination in your institution?	47 (78.3)	13 (21.7)	174 (94.1)	11 (5.9)
Was the inpatient service deactivated during the pandemic?	55 (91.7)	5 (8.3)	153 (82.7)	32 (17.3)

Table 2. Comparison of the working hours of the residents and specialists in the hospital before and during the pandemic

hours	Residents				Specialists			
	Before		During		Before		During	
	n	%	n	%	n	%	n	%
0 – 4	0	0.0	9	14.5	4	1.8	107	46.9
4 – 8	1	1.6	32	51.6	68	29.8	93	40.8
8 – 12	34	54.8	19	30.6	153	67.1	24	10.5
12 and above	27	43.5	2	3.2	3	1.3	4	1.8

The changes in the outpatient-clinics, emergency service, inpatient department, elective surgeries, and the variety of surgeries performed in the new working conditions in the early period of the pandemic are given as Figures (Figures 3–7). In the pre-pandemic period, the three most common types of surgery performed by the participants were in trauma (54.7%), arthroplasty (44.2%) and sports injuries (14.9%), while this distribution was trauma (86.8%), arthroplasty (44.8%) and, hand and microsurgery (18.5%) during the pandemic period.

The results of the participants’ considerations regarding the change in emergency services and elective cases following the COVID-19 pandemic are given in Table 3.

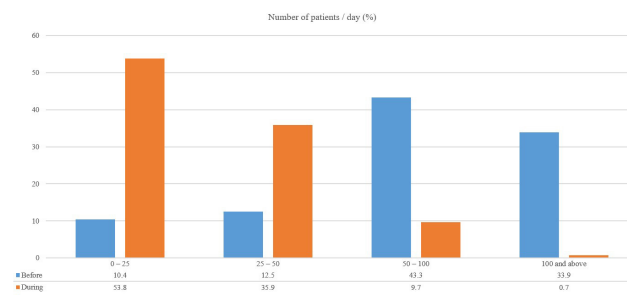


Figure 3. Change in the number of outpatients in Orthopedics and Traumatology before and during the pandemic (%)

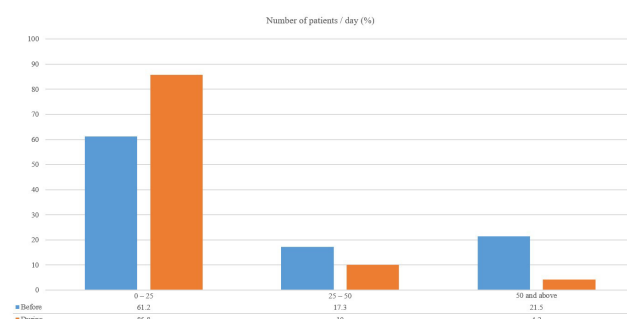


Figure 4. Change in the number of Orthopedics and Traumatology patients evaluated in emergency services before and during the pandemic (%)

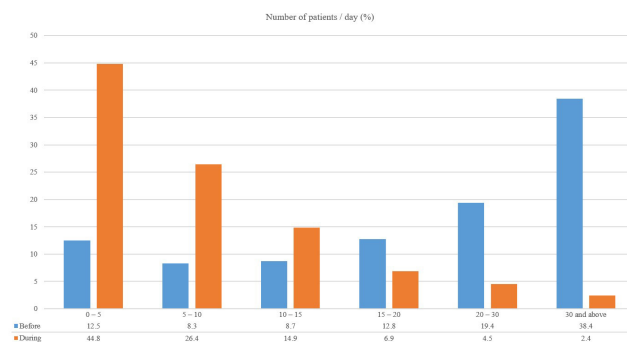


Figure 5. Change in the number of patients hospitalized in Orthopedics and Traumatology inpatient departments before and during the pandemic (%)

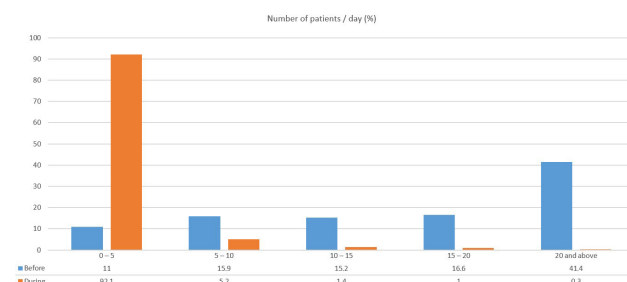


Figure 6. Change in the number of elective surgeries performed in the field of Orthopedics and Traumatology before and during the pandemic (%)

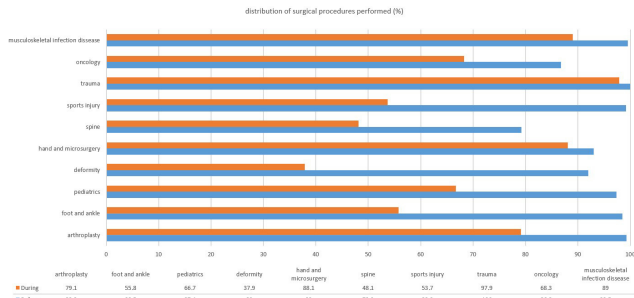


Figure 7. Change in the variety of surgeries performed in institutions in the field of Orthopedics and Traumatology before and during the pandemic (%)

I think that....	Trauma						Elective cases	
	Pediatric		Adult		Elderly		n	%
	n	%	n	%	n	%		
there is an increase in the number of cases	16	5.6	13	4.5	22	7.7	2	0.7
there was no change and the course is similar	64	22.5	54	18.9	91	31.7	8	2.8
there is a decrease in the number of cases	205	71.9	219	76.6	174	60.6	278	96.5

In the early period of the pandemic, the rate of patients refusing suggested treatment and the reason for the decrease in the number of patients who admitted to hospital were reported by the participants (Tables 4 and 5). It was stated by the participants that 67.5% of the patients who did not accept the treatment method did not have a tendency to admission to a private hospital. However, it was stated that traumatized patients' admission was significantly delayed (51% of participants). When the precautions taken during the surgical treatment of patients with COVID-19 are examined it was determined that the participants performed the patients' surgeries in a separate operating room (76.7%), the surgeries were performed with a small number of teams (84.0%), and they used additional personal protective equipments (94.1%).

Table 4. Assessment of treatment withdrawal habits in pandemic conditions

I think that....	discontinuing		refusing with written approval	
	n	%	n	%
there is a change in the rate of increase	127	44.6	97	33.9
it continues in the same way	133	46.7	164	57.3
there is a decrease in treatment rejection rates	19	6.7	18	6.3
I don't know	6	2.1	7	2.4

Table 5. Evaluation of the possible reasons for the decrease in the number of patients during the pandemic in terms of the participants

	n (%)
The risk of transmission of COVID-19 infection due to the lack of isolation	203 (83.1)
The risk of direct transmission from physicians and healthcare workers	135 (48.6)
The curfew implementation	127 (45.7)
Not accepting the idea of delaying treatment as a mistake	113 (40.6)
Inadequate hospital hygiene	47 (16.9)

One of the subjects of this survey was the change in the economic monthly earnings of residents and specialist due to flexible working conditions and decreasing patient admissions. While 52% of the residents stated that there was "no economic change", 57% of the specialists reported that their incomes decreased (Figure 8).

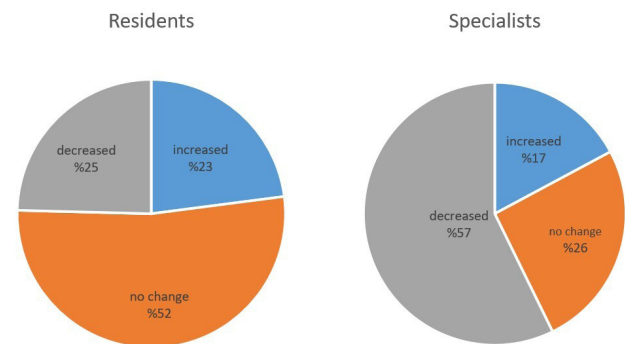


Figure 8. Changing economic earnings in pandemic working conditions

Discussion

Demographic information

The COVID-19 pandemic has brought along some changes in providing and receiving health services in Turkey as well as all over the world. The changes in Orthopedics and Traumatology in the early period of the pandemic were aimed to be enlightened by this survey study. The survey study was carried out with similar proportions of participants from each geographical region of our country. It was observed that the participation from the three metropolitan cities was higher (Istanbul, Ankara and Izmir). In Turkey, 90 educational institutions provide orthopedics and traumatology training. The fact that there were 53 department heads among the participants and that most of the respondents work in these hospitals is crucial in terms of reflecting the results of this survey in Turkey in general.

It has been observed that almost half of the specialist experienced a significant decrease in their salaries in terms of monthly economic earnings in the early period after the changing working conditions with the pandemic. In Turkey, there is a system of salary based on the performance. The decrease in patient applications and in interventional procedures can explain the loss of income. On the other hand, it was observed that there was no significant change in the incomes of residents. Similarly, in the study in which 858 German orthopedic specialists, 26.2% of the participants stated that the compensation for economic loss was sufficient, while 62.8% stated that more financial support should have been provided. It has been determined that the self-employed physicians, who are among the participants, have more economic gain concerns and negative effects than those working in the hospital (7).

Changes in internal tasking and working conditions

It was observed that the majority of the residents and specialists working in pandemic centers did not work in the COVID-19 suspicious patient areas and in the departments where the follow-up and treatment of the infected patients are included. In particular, the fact that 96.8% of the residents participating in the survey work in pandemic centers showed that almost all tertiary care hospitals in Turkey actively worked during the pandemic period. However, it could be said that in the early stages of the pandemic, residents and specialists working in the Orthopedics and Traumatology worked in the background of the pandemic departments. On the other hand, it was reported by most of the participants that the Orthopedics and Traumatology inpatient-clinics were closed and turned into infectious diseases clinics in the institutions where they worked as the course of the pandemic worsened. With various circulars published by the Ministry of Interior,

flexible working arrangements were introduced for public officials. It was aimed to prevent in-hospital contamination to health workers who do not take an active role in the pandemic departments. This supported that the flexible working system could be planned according to the needs and could be an appropriate decision in pandemic situations. Closing the Orthopedics and Traumatology inpatient-clinics and converting them to infection diseases units brought some difficulties in clinical services, but it was a crucial gain in terms of the pandemic. Similar administrations have been shown in a study involving 401 Spanish specialists. It has been reported that 46% of the participants were asked to cooperate in other units or services (8). Likewise, according to the study, in which 102 orthopedic specialists from 19 different European countries participated, it was observed that 49% of specialist in the management of COVID-19. It was also stated that there was not a significant difference between public and private institutions in this working system (51.4% and 44.1%, respectively) (9).

Participants stated that internal measures were taken in terms of high risk of contamination (residents 78.3%, specialists 94.1%). This was a substantial step in the protection of both healthcare workers and patients and also their companions in terms of hospital-acquired contamination. Similarly, Randau et al. (7) reported in their study that the information provided by the government was good (71%) for the participants, while the measures taken were necessary (81.4%) and sufficient (67.9%). Further, Ranuccio et al. (9) in the multinational study, they reported the number of specialists who received training on knowledge and management of COVID-19 as 69 (67.6%), while 15 (65.2%) of 23 specialists who did not receive training were assigned to pandemic clinics.

Working hours of participants varied considerably before and during the pandemic. In the pre-pandemic period, almost all of the residents worked more than 8 hours a day, during the pandemic this time fell to one third. Almost half of the residents stated that they work between 4 and 8 hours. While the majority of specialists worked between 4-12 hours before the pandemic, it was observed that almost half of them worked between 0-4 hours during the pandemic. There has been a significant decrease in working hours with the pandemic. The effect of the flexible working system applied in this decline is undeniable. However, negative effects in the training of Orthopedics and Traumatology due to this decrease should be a separate object to debate. Considering that the current training is 5 years, we think that the educational activities postponed due to the pandemic have serious negative effects, even if they are supported online.

Along with the pandemic, some changes were observed in the number of night shifts of the residents. In the pre-pandemic period, almost half of the residents stated that they had 8 or more night shifts per month, while only 20% of them were on shifts of 8 or more per month during the pandemic. In general, it was determined that during the pandemic, residents were on duty between 4 and 8 times a month. Whether the ward of responsibility is a COVID-19 and/or orthopedic in-patient clinics was not questioned in this survey.

Variety of services provided and changes in patient applications

One of the most crucial points of this study is that it shows the change in orthopedics and traumatology outpatient services. In this period, when the number of infected patients was high, there was a critical decrease in the number of patients who applied to the outpatient-clinics. According participants' observation, while the application rate of 50 and above per day was 77.2% in the pre-pandemic period, this rate decreased to 10.4% during the pandemic. It is obvious that there is a significant decrease in the number of patients. Although not as rigid, parallel decreases were observed in the number of patients admitted to the emergency department with Orthopedics and Traumatology complaints. When the data of other countries are examined, it has been reported that outpatient-clinics have stopped over 90% in a study conducted in 9 different countries (9). In an Italy-based study, it was reported that there was a 59.8% decrease in emergency department admissions involving orthopedics and traumatology compared to the pre-pandemic period. However, geriatric traumas did not decrease, in the general population; it was determined that domestic accidents increased (10).

In the pre-pandemic period, while the average rate of 20 or more inpatients per day in Orthopedics and Traumatology inpatient-clinics was approximately 58%, it was determined that this rate decreased to 6.9% during the pandemic period. Almost half of the participants stated that they are trying to provide orthopedics and traumatology inpatient-clinics with a maximum of 5 beds.

One of the most remarkable changes brought by the pandemic period in the field of orthopedics and traumatology is the decreasing trend in the number of elective surgeries. In general, participants stated that while the rate of elective patient surgeries of 15 or more per week was 58%, this rate decreased to 1.3% during the pandemic. During

pandemic process, 92.1% of those who participated in the survey stated that they could perform a maximum of 5 elective surgeries per week. During the pandemic, decline in elective surgeries were detected in many sub-areas. It is seen that this restructuring has similarly affected other countries (7, 8, 11-13). According to the data obtained in the study, the most serious changes were observed in deformity correction, sports injuries and foot and ankle surgeries with a decrease of approximately 50%. Although a significant numerical decrease was reported in elective surgeries compared to the pre-pandemic period, hand and microsurgery, musculoskeletal infections and arthroplasty surgeries continued to be performed frequently when the proportional changes in the variety of surgeries were examined. In multinational survey studies conducted across Europe, it has been shown that there are serious decreases in elective cases, especially in arthroplasty surgeries (7, 12, 13). Along with the pandemic, such a disruption in elective surgeries will cause or have caused serious problems and severe backlogs after the pandemic. Naturally, the pandemic is a vital priority and such problems are inevitable. Another problem created by the postponement of elective surgeries is that it creates a refractory deficiency in the vocational skills training of residents.

The patient group treated with surgery most frequently before and during the pandemic was caused by trauma. While the rate of centers where trauma surgeries were performed most frequently before the pandemic was approximately 55%, this rate increased to 87% during the pandemic period. In other words, almost only trauma-induced patients were treated surgically during the pandemic period. Although most of the patients who underwent surgical treatment were due to trauma, most of the participants reported that the number of traumatized pediatric and adult patients during the pandemic period decreased by $\frac{3}{4}$ and by $\frac{2}{3}$ in the elderly patient group. Turgut et al. (14) examined trauma cases admitted to a tertiary care hospital between 2018 and 2020. In this study, it was shown that the frequency of fractures decreased one-third with the pandemic, the average age of patients exposed to trauma decreased, and surgical treatments were almost doubled in patients under 16 years of age. Measures such as the general curfew applied in the early period of the COVID-19, and then the curfew and transportation restrictions applied under the age of 18 and over the age of 65, and the restriction of intercity and intra-city traffic density can be considered as the main factors in reducing the number of traumas.

Changes in the health care delivery process

Approximately 45% of the participants stated that the patients did not accept the recommended treatment and 34% stated that they refused treatment with a written approval. The patients refused to receive treatment from the relevant institution due to the pandemic despite all the disadvantages that may occur in the absence of surgery. The participants reported that they thought that patients who refuse treatment or neglected treatment did not tend to go to a private health center or another public hospital that was not a pandemic hospital. Parallel to this, half of the participants stated that delayed diseases and disabilities increased in outpatient-clinics. In a survey of 12000 orthopedic surgeons in India, it was reported that trauma surgeries decreased as well as elective surgeries. It has been concluded that conservative treatments are at the forefront as a reason for this, and revision/reconstruction surgeries are performed more frequently (11).

The most prominent reason for the decrease in the number of patients is the risk of transmission (83%) due to the lack of isolation. The second reason is the risk of direct transmission from physicians and healthcare workers (48%). The curfew implementation and the thought that postponing treatment is not wrong was seen as an effective factor in this decrease at a rate of 40-45%. In the survey conducted at the United Nations, in which the opinions of 360 patients who were planned to have surgery were reflected, it was observed that in places where the pandemic was felt heavy, patients had thoughts of canceling their surgeries, as well as the cancellation procedures were given by surgeons (15).

In this observationally planned study, data and inferences were obtained from the thoughts of the participants. No numerical data were collected from the clinics to which the participants were affiliated. This is the most important limitation of the study.

In conclusion, the number of participants and the fact that most of them work in pandemic hospitals made the results of this observational survey study valuable. During the pandemic period, serious disruptions were experienced in every field in orthopedics and traumatology services. The most crucial result of the decrease in patients, especially in elective diseases, is that there are some delays in the treatment of these patients and accumulation in this group of patients.

During this period, the residents both worked in the pandemic services, and they were interested in the diagnosis, follow-up and treatment of very few patients in Orthopedics and Traumatology. Even if this is an absolute necessity created by the pandemic, it is highly likely that it will cause serious disruptions in the training. In conclusion, it is crucial to prepare health service action plans for other possible pandemic situations or new waves of COVID-19 due to mutations.

DECLARATIONS

Disclosure of Funding and Conflict of Interest

Each of the authors states that there is no funding including pharmaceutical and industry support and conflict of interest about this manuscript.

Ethics Committee Approval

Ethics committee approval was obtained for this study from the Tepecik Training and Research Hospital - Local Ethics Committee (no: 2020/3).

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