

# How the COVID-19 pandemic is affecting paediatric orthopaedic practice in Turkey

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## Abstract

**Purpose** Changes to routine clinical approaches during the corona virus disease 2019 (COVID-19) pandemic are necessary to decrease the risk of infection in patients and healthcare providers. Because the treatment of many conditions is time sensitive, it is crucial to modify the management of paediatric orthopaedic cases by minimizing any subsequent morbidity. Our purpose was to describe the different measures and management strategies that have been applied by paediatric orthopaedic surgeons and to show how paediatric orthopaedic practice is affected in Turkey.

**Methods** All active practicing members of the Turkish Society of Children's Orthopedic Surgery (TSCOS) were contacted via telephone and asked to fill out a survey (24 questions). For participants, either an email or web link was sent to their mobile phones. An online survey generator was used.

**Results** A total of 54 survey responses were collected, for a response rate of 55%. In all, 62% reported a 75% decrease in their outpatient frequency, whilst 75% reported a 75% decrease in their surgery frequency. A total of 86% of the performed surgeries were emergency cases. None of the participants performed elective surgeries, and 61% did not have the consent form specific to COVID. Choice of protective measures have changed considerably; 96% stated that they needed an algorithm to follow for situations such as pandemic.

**Conclusion** This national survey revealed that the COVID-19 pandemic has had a detrimental effect on paediatric orthopaedic practice and practitioner response varies in terms of reactions and precautions. The necessity of creating a protocol based on what we have learned must be taken into consideration.

*Level of evidence: V*

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**Keywords:** COVID-19; pandemic; pediatric orthopaedics; survey

## Introduction

After severe acute respiratory syndrome and Middle East respiratory syndrome, coronavirus disease 2019 (COVID-19) is the third coronavirus infection in two decades to have been originally reported in Asia.<sup>1</sup> On 30 January 2020, the World Health Organization (WHO) proclaimed COVID-19 as a Public Health Emergency of International Concern and by 11 March 2020, it was officially titled as a global pandemic.<sup>2</sup>

The number of people diagnosed with COVID-19 worldwide crossed the 17.9 million mark on 01 August 2020; the case fatality rate across 215 countries and territories was 6%.<sup>3</sup> By the time COVID-19 was declared a global pandemic, more than 231 000 people in Turkey had been infected by the virus and 215 516 patients had recovered in total. In fact, Turkey is ranked 17th in the world in terms of the number of COVID-19 infected patients.<sup>3</sup> Most of the hospitals in Turkey were defined as pandemic hospitals by the Ministry of Health; pandemic hospitals were only allowed to accept COVID-19 and emergency cases. Therefore, daily working protocols in hospitals changed radically.<sup>4</sup>

The emergence of the COVID-19 pandemic has severely affected medical practice throughout the world.<sup>5</sup> Changes to routine clinical approaches within healthcare settings are necessary to decrease the risk of infection in patients, families and healthcare providers, while balancing the dangers and benefits of delaying or modifying routine patient care.<sup>6</sup> It is obvious that healthcare management had to be modified under these restrictions.

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Paediatric orthopaedic practice has also been seriously affected by the COVID-19 pandemic, as the number of elective surgeries and outpatient clinics have had to be reduced.<sup>7</sup> Whilst paediatric orthopaedic practice has its own challenges, and while the treatment of many conditions is time- (age-) sensitive, none of them are considered as either emergency or elective processes. Thus, it is crucial to modify the management of paediatric orthopaedic cases in a way that minimizes any subsequent morbidity and to focus on the safety of patients as well as staff.

We composed a survey to evaluate how the COVID-19 pandemic has impacted paediatric orthopaedic practice in Turkey. Our purpose was to describe the different measures that have been put in place by paediatric orthopaedic surgeons. We suggest that this survey could present an opportunity to improve our understanding of how paediatric orthopaedic practice is affected during a pandemic. Thus, its results could help disaster preparedness and maintenance of care during future interruptions to the healthcare system.

## Materials and methods

A survey comprising of 24 questions was designed by the lead author (SEB), and reviewed, tested and revised by six surgeon members (SEB, İAS, AŞ, OAE, BG and MI) of the Turkish Pediatric Orthopedic Society (TPOS) between 04 and 26 April 2020. TPOS has 128 members, of which 97 are active members who have shown interest in paediatric orthopaedics over the last five years. All active practicing members of TPOS were contacted via telephone to confirm their active involvement in treating paediatric orthopaedic ailments, and were then asked to fill out a questionnaire. Members who agreed to participate were later provided with either an email address or a web link on their mobile phones. The minimum number of respondents for the study was calculated as 49 for a 95% confidence interval and a 10% margin of error. An online survey generator was used to collect and analyze all the responses (Survey Monkey, San Mateo, California). The survey questions are shown in Table 1.

Ethics committee approval was not required since no patient information was provided and all participants were medical doctors who were informed before survey.

## Results

A total of 54 survey responses from 50 different institutes were collected, resulting in a response rate of 55% (54/97).

### *Respondent/physician demographics*

More than half (51%) of the survey respondents work in a university hospital (public/foundation or private). The

respondents had been in paediatric orthopaedic practice for a median of nine years (interquartile range 5 to 40).

### *Effect of COVID-19 on respondents' daily general practice*

The majority of the respondents' institutions (79%) are defined as a pandemic hospital by the Turkish Ministry of Health. When the respondents were asked if they worked in a pandemic (COVID-19) outpatient clinic or at a pandemic service provider during this period, the majority (72%) answered negatively.

We queried the respondents about whether their daily practice was generally affected by the COVID-19 pandemic. The majority of the respondents (61%) reported that their clinical and surgical procedures have largely stopped (Table 2).

### *Effect of COVID-19 on respondents' outpatient clinic practice*

The respondents were asked about how their weekly outpatient frequency had changed since the start of the COVID-19 pandemic in Turkey. The majority (62%) reported a 75% decrease in their outpatient frequency. Moreover, 16% stated that their outpatient clinics were aborted (Table 2).

A remarkable number of respondents reported that they offered telemedicine services to their patients (42%) via instant messaging applications and/or social media platforms, with WhatsApp (by Facebook Inc., California, USA) being the most frequently used (83%) programme among them. However, 98% of these respondents had not obtained a special informed consent for providing telemedicine services.

We queried the respondents about the personal protective equipment (PPE) they prefer to use while examining patients during their outpatient clinics. All the respondents involved in outpatient clinic services reported mask usage, with 'surgical masks' being the most frequently cited equipment (75%). Gloves (68%) and scrub covers (aprons) (38%) were the other most frequently used PPE (Table 2).

The majority of the respondents asked patients to put on a mask (77%) and limited the number of accompanying persons (67%) before medical examination. Only 5% did not request any additional measures from patients (Table 2).

When we asked if they continued with interventional procedures (Kirschner wire extraction, intra-articular injection etc) at their outpatient clinics, the majority answered that they did (70%).

### *Effect of COVID-19 on respondents' surgical practice*

The respondents were asked whether their weekly operation frequency had changed since the start of the COVID-19 pandemic in Turkey. The majority (75%) reported a 75% decrease in surgery frequency. Moreover, 18% stated that they no longer performed surgery (Table 2).

**Table 1** Questions asked in survey

Questions	Answer options
1) What type of institution are you currently working?	<ul style="list-style-type: none"> <li>• Public University Hospital</li> <li>• Education Research Hospital</li> <li>• Public Hospital</li> <li>• Private practice</li> <li>• Foundation or Private University Hospital</li> <li>• Private Hospital</li> </ul>
2) How many years have you been especially interested in child orthopedics? (Fill in the blank)	..... (text box)
3) Is your institution defined as a pandemic hospital by the ministry of health?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
4) Is your daily practice generally affected by covid-19 infection?	<ul style="list-style-type: none"> <li>• Yes, my clinical and surgical procedures almost completely</li> <li>• Yes, my clinical and surgical procedures have largely stopped</li> <li>• Yes, my clinical and surgical procedures have partially stopped</li> <li>• No, it didn't affect my clinical and surgical procedures at all</li> </ul>
5) How has your weekly outpatient frequency changed since march 10, 2020, the first date of detection of covid-19 infection in our country?	<ul style="list-style-type: none"> <li>• Not changed</li> <li>• Decreased 25%</li> <li>• Decreased 50%</li> <li>• Decreased 75%</li> <li>• I don't perform outpatient clinic</li> </ul>
6) Do you offer telemedicine services such as counseling or examination over the internet / video to your patients?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
7) If you offer these services, which program do you use?	<ul style="list-style-type: none"> <li>• Zoom</li> <li>• Skype</li> <li>• Whatsapp</li> <li>• Face Time</li> <li>• Cisco</li> <li>• Teams</li> </ul>
8) Have you obtained a special informed consent for telemedicine services?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
9) Which of the protective equipments do you prefer to use while patient examination in your outpatient clinics? (Can choose more than one option)	<ul style="list-style-type: none"> <li>• Safety goggles</li> <li>• Ffp3 mask</li> <li>• Ffp2 mask</li> <li>• Surgical mask</li> <li>• Bonnet</li> <li>• Visor</li> <li>• Scrub cover (apron)</li> <li>• Glove</li> <li>• I do not use special protective equipment</li> <li>• Other ..... (text box)</li> </ul>
10) Which of the following did you do before taking your patients to the outpatient clinic for examination? (Can choose more than one option)	<ul style="list-style-type: none"> <li>• Questioning the contact story</li> <li>• Questioning symptoms</li> <li>• Measuring the temperature</li> <li>• Put on a mask</li> <li>• Limiting the number of companions</li> <li>• None</li> <li>• Other ..... (text box)</li> </ul>
11) Have you continued the interventional procedures (k wire extraction, intra-articular injection, etc.) that you performed in outpatient clinic?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
12) How has your weekly operation frequency changed since march 10, 2020, the date that covid-19 infection was first seen in our country?	<ul style="list-style-type: none"> <li>• Unchanged</li> <li>• Decreased 25%</li> <li>• Decreased 50%</li> <li>• Decreased 75%</li> <li>• I have not performed any surgery</li> </ul>
13) Which of the surgeries below did you perform?	<ul style="list-style-type: none"> <li>• Elective cases</li> <li>• Emergency cases</li> <li>• Same day surgeries</li> <li>• I have not performed any surgery</li> <li>• Other ..... (text box)</li> </ul>
14) which of the following additional precaution did you take during the surgery?	<ul style="list-style-type: none"> <li>• Ffp3 mask</li> <li>• Ffp2 mask</li> <li>• Space suit helmet</li> <li>• Covering the devices in the operating room with atarpaulin</li> <li>• Wearing antiviral overalls under the surgical gown</li> <li>• Negative pressure operation room</li> <li>• Safety goggles</li> <li>• Visor</li> <li>• None</li> <li>• Other ..... (text box)</li> </ul>

(cont.)

**Table 1** Questions asked in survey (cont.)

Questions	Answer options
15) Which of the following precautions did you take for the patients before the operation?	<ul style="list-style-type: none"> <li>• Questioning the contact story</li> <li>• Questioning symptoms</li> <li>• Measuring the temperature</li> <li>• Quick Covid-19 test for immunoglobulins</li> <li>• Covid-19 swab test (PCR)</li> <li>• None</li> <li>• Other ..... (text box)</li> </ul>
16) Which patients did you run covid-19 test for emergency cases before surgery?	<ul style="list-style-type: none"> <li>• All of the patients</li> <li>• Only for suspicious cases</li> <li>• None of the patients</li> </ul>
17) What is your opinion about asking for covid-19 test before surgery?	<ul style="list-style-type: none"> <li>• Should be requested from every cases</li> <li>• Should be requested from suspicious cases</li> <li>• it is unnecessary</li> <li>• I believe that the reliability of the test is low</li> </ul>
18) How did you protect yourself against medico-legal problems about the covid-19 outbreak?	<ul style="list-style-type: none"> <li>• I changed the informed consents for the surgery</li> <li>• I took a video or audio recording with permission while giving information to patients</li> <li>• I asked the patients to add sentences explaining the current situation and risks on current informed consent paper with a handwriting.</li> <li>• I didn't make any changes</li> </ul>
19) How did you organize the treatment of the cases you had to postpone?	<ul style="list-style-type: none"> <li>• Observation with cast/brace</li> <li>• Follow-up with an exercise program</li> <li>• Injection therapy (steroid / Botox ....)</li> <li>• Skillful neglect</li> <li>• Other ..... (text box)</li> </ul>
20) Which of the following operations did you performed during this process or would you think it should be done?	<ul style="list-style-type: none"> <li>• Joint debridement for septic arthritis</li> <li>• Insitu screw fixation for SCFE</li> <li>• Closed reduction for DDH</li> <li>• Open reduction for DDH</li> <li>• Trauma/fracture cases that have surgical indication</li> <li>• Achillotomy and cast treatment for PEV</li> <li>• Scoliosis surgery</li> <li>• Tenotomy / myotomy</li> <li>• Corrective osteotomies</li> <li>• Tendon transfers</li> <li>• Botox injection</li> <li>• Arthroscopic procedures</li> <li>• Other ..... (text box)</li> </ul>
21) Did you continue the DDH screening during this period?	<ul style="list-style-type: none"> <li>• Yes, I had a routine hip USG at 1 month of age</li> <li>• Yes, but I suggested USG at 3 months of age</li> <li>• No, I postponed it until the outbreak ended</li> <li>• Other ..... (text box)</li> </ul>
22) For patients with the diagnosis of pev;	<ul style="list-style-type: none"> <li>• I postponed the treatment until the outbreak ended</li> <li>• I continued cast treatment once a week</li> <li>• I changed the casts at longer intervals (2 or 3 weeks)</li> <li>• I continued the cast treatment, but I did not perform an achillotomy, postponed it to the end of the outbreak</li> <li>• I performed achillotomy in time</li> </ul>
23) Did you work in a pandemic (covid-19) outpatient clinic or a service during this period?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
24) Do you think that it is necessary to create an algorithm related to clinical serving in such pandemic situations?	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>

When the remainder were asked about which surgeries they performed during this period, 53 respondents answered this question: 86% of the surgeries were emergency cases and 16% were same-day surgeries (tenotomy, Kirschner wire extraction etc). None of the respondents performed elective surgeries (Table 2).

Respondents were queried about the additional PPE that they prefer to use during surgery; 48 respondents answered this question. The most frequently used equipment types were safety goggles (70%), visors (58%) and Ffp3 masks (43%). Only 12% of the respondents that continue to perform surgeries stated that they did not use any additional precautions (Table 2).

Before surgery, 80% of the respondents questioned the patients about their upper respiratory system symptoms and measured their temperatures, while 72% of the respondents asked the patients about their contact histories. Only 20% asked for a COVID-19 swab test (polymerase chain reaction) and 8% requested a rapid COVID-19 test.

When we asked the respondents about the patients that they preferred to run COVID-19 tests on for emergency cases before surgery, 49 of them answered this question. The majority of the answers (46%) disclosed that they requested such tests only for suspicious cases, with 18% reporting asking for the test in all cases (Table 2).

**Table 2** Answers to some of the questions

Questions	Answer options	n (%)
What type of institution are you currently working?	Public University Hospital	21 (38)
	Education Research Hospital	16 (29)
	Public Hospital	1 (1)
	Private practice	6 (11)
	Foundation or Private University Hospital	7 (12)
	Private Hospital	3 (5)
Is your daily practice generally affected by covid-19 infection?	Yes, my clinical and surgical procedures stopped almost completely	16 (29)
	Yes, my clinical and surgical procedures have largely stopped	33 (61)
	Yes, my clinical and surgical procedures have partially stopped	5 (9)
	No, it didn't affect my clinical and surgical procedures at all	0 (0)
How has your weekly outpatient frequency changed since march 10, 2020, the first date of detection of covid-19 infection in our country?	Not changed	0 (0)
	Decreased 25%	4 (7)
	Decreased 50%	7 (12)
	Decreased 75%	34 (62)
	I don't perform outpatient clinic	9 (16)
		23 (42)
Do you offer telemedicine services such as counseling or examination over the internet / video to your patients?	Yes	31 (57)
	No	2 (5)
Have you obtained a special informed consent for telemedicine services?	Yes	38 (95)
	No	17 (31)
Which of the protective equipments do you prefer to use while patient examination in your outpatient clinics?	Safety goggles	9 (16)
	Ffp3 mask	15 (27)
	Ffp2 mask	40 (74)
	Surgical mask	19 (35)
	Bonnet	11 (20)
	Visor	21 (38)
	Scrub cover (apron)	37 (68)
	Glove	0 (0)
	I do not use special protective equipment	3 (5)
	Other ..... (text box)	16 (30)
		17 (32)
Which of the following did you do before taking your patients to the outpatient clinic for examination?	Questioning the contact story	20 (37)
	Questioning symptoms	41 (77)
	Measuring the temperature	36 (67)
	Put on a mask	3 (5)
	Limiting the number of companions	4 (7)
	None	0 (0)
	Other ..... (text box)	0 (0)
		0 (0)
How has your weekly operation frequency changed since march 10, 2020, the date that covid-19 infection was first seen in our country?	Unchanged	3 (5)
	Decreased 25%	41 (75)
	Decreased 50%	10 (18)
	Decreased 75%	0 (0)
	I have not performed any surgery	46 (86)
		9 (16)
Which of the surgeries below did you perform?	Elective cases	6 (11)
	Emergency cases	5 (9)
	Same day surgeries (tenotomy,k-wire extraction...)	21 (43)
	I have not performed any surgery	12 (25)
	Other ..... (text box)	1 (2)
Which of the following additional precaution did you take during the surgery?	Covering the devices in the operating room with atarpaulin	6 (12)
	Wearing antiviral overalls under the surgical gown	8 (16)
	Negative pressure operation room	8 (16)
	Safety goggles	8 (16)
	Visor	34 (70)
	None	28 (58)
	Other ..... (text box)	6 (12)
		3 (6)
		36 (72)
		40 (80)
Which of the following precautions did you take for the patients before the operation?	Questioning the contact story	40 (80)
	Questioning symptoms	40 (80)
	Measuring the temperature	4 (8)
	Quick Covid-19 test for immunoglobulins	10 (20)
	Covid-19 swab test (PCR)	5 (10)
	None	7 (14)
	Other ..... (text box)	9 (18)
Which patients did you run covid-19 test for emergency cases before surgery?	All of the patients	23 (46)
	Only for suspicious cases	17 (34)
	None of the patients	

(cont.)

**Table 2** Answers to some of the questions (cont.)

Questions	Answer options	n (%)
What is your opinion about asking for covid-19 test before surgery?	Should be requested from every cases	19 (36)
	Should be requested from suspicious cases	27 (51)
	It's unnecessary	1 (1)
	I believe that the reliability of the test is low	5 (9)
How did you protect yourself against medico-legal problems about the covid-19 outbreak?	I changed the informed consents for the surgery	20 (39)
	I took a video or audio recording with permission while giving information to patients	0 (0)
	I asked the patients to add sentences explaining the current situation and risks on current informed consent paper with a handwriting.	22 (43)
	I didn't make any changes	17 (33)
How did you organize the treatment of the cases you had to postpone?	Observation with cast/brace	28 (52)
	Follow-up with an exercise program	33 (62)
	Injection therapy (steroid / Botox ....)	5 (9)
	Skillful neglect	26 (49)
	Other ..... (text box)	8 (15)
Which of the following operations did you performed during this process or would you think it should be done?	Joint debridement for septic arthritis	43 (81)
	Insitu screw fixation for SCFE	35 (66)
	Closed reduction for DDH	13 (24)
	Open reduction for DDH	4 (7)
	Trauma/fracture cases that have surgical indication	49 (92)
	Achillotomy and cast treatment for PEV	25 (47)
	Scoliosis surgery	0 (0)
	Tenotomy / myotomy	3 (3)
	Corrective osteotomies	1 (1)
	Tendon transfers	0 (0)
	Botox injection	2 (3)
	Arthroscopic procedures	0 (0)
	Other ..... (text box)	6 (11)

PCR, polimerase chain reaction; SCFE, slipped capital femoral epiphysis; DDH, developmental dysplasia of the hip; PEV, pes equinovarus

We asked the respondents their opinion about routine COVID-19 testing before surgery and 52 of them answered this question. Most (51%) felt that a test should be requested in suspicious cases, while 36% declared that it should be mandatory for every case and 9% stated that they believed the reliability of such tests to be low.

We queried the respondents about how they protect themselves against medico-legal problems during the COVID-19 pandemic; 51 respondents answered this question. In total, 43% reported asking patients to provide informed consent on paper and in their own handwriting, by stating that they understood the health-based risks associated with the current situation. Although 39% of the participants reported changes to the informed consent documentation before surgery, 33% of the respondents reported no changes (Table 2).

The respondents were asked about how they organized treatment for the cases that were postponed. The most frequently cited options were follow-up with an exercise programme (62%), observation of the cast/brace (52%) and skillful neglect (49%) (Table 2).

The respondents were asked about the types of operations they performed during this time period or felt that

should not be postponed. A total of 53 of them answered this question. The most frequent answers were trauma cases with surgical indications (92%), joint debridement for septic arthritis (81%) and *in situ* screw fixation for slipped capital femoral epiphysis (66%) (Table 2).

The respondents were asked about whether they continued with the developmental dysplasia of the hip (DDH) screening programme during this period. The majority of the respondents (52%) reported that they conducted routine hip ultrasonography (USG) at one month of age. In all, 30% (16/54) reported that they have postponed the USG until after the outbreak ends. Some respondents (9%, 5/54) stated that they suggested that a USG be performed at three months of age.

We then asked the respondents about how they managed the pes equinovarus (PEV) cases. In all, 51 respondents answered this question. Most continued with the normal routine casting treatment once in a week (47%), while 17% have postponed the treatment until after the end of the outbreak. Of the respondents, 15% continued the cast treatment but did not perform an achillotomy (which was postponed until after the end of the outbreak). A total of 11% chose to change the casts at longer

intervals (two or three weeks). Only 7% performed achil-  
lotomy in time.

At the end of the survey, the respondents were asked if they think it is necessary to create an algorithm for clinical services in similar pandemic situations. Almost all of the respondents (96%, 52/54) stated that an algorithm is necessary.

## Discussion

Since COVID-19 was declared a global pandemic by the WHO four months ago, many publications guiding orthopaedic management during the pandemic have been published.<sup>5-10</sup> However, most of these publications touched upon general orthopaedic practice and almost all of them reported experiences and opinions. Technology has made it possible for surgeons to communicate via online platforms.<sup>11</sup>

Different authors worldwide have shared their experiences and recommendations.<sup>12,13</sup> During this period, surgeons were able to access such information and guidance, but how this should be reflected to their practices was not clear, especially in terms of paediatric orthopaedics.<sup>14</sup> Our purpose was to establish common ground by gathering information with the help of a survey about how experienced paediatric orthopaedic surgeons managed their patients and practices. Since the majority of the practices' institutions (79%) have been defined as pandemic hospitals, it is clear that the pandemic has significantly affected daily paediatric orthopaedic practice. The results of this survey of TPOS members during the COVID-19 pandemic record a substantial reduction in outpatient clinics visits and number of surgical procedures.

It has also been recommended that clinicians extend the duration between follow-ups to prevent patient overcrowding in hospitals during the COVID-19 pandemic.<sup>7</sup> As Peiro-Garcia et al<sup>7</sup> stated, 'we expected the number of outpatients to decrease'.<sup>7</sup> The number of cases seen weekly in outpatient clinics decreased substantially (62% of the respondents declared that the number of weekly outpatient clinics decreased by 75% and 16% did not hold any outpatient clinics during the COVID-19 pandemic). As an alternative, use of telemedicine during the time of disasters and public health emergencies has increased.<sup>8</sup> In total, 42% of paediatric orthopaedic surgeons surveyed offered telemedicine services, however, only 2% have obtained special informed consent for providing telemedicine services. The results of this survey also revealed a substantial reduction and wide variation in outpatient clinic activity during the COVID-19 pandemic. Additionally, we found that telemedicine is a useful instrument for monitoring paediatric orthopaedic patients in clinical settings without causing any risks for the patients, caregivers and staff.

However, it is obvious that a telemedicine-specific consent form should be created.

Farrell et al<sup>6</sup> recommended modifying paediatric orthopaedic practice to prevent transmission between patients, parents and medical staff by limiting the number of surgical procedures to emergency cases, such as traumatic injuries, and considering nonoperative management where possible. This survey showed that weekly paediatric orthopaedic operation frequency has decreased significantly since the pandemic first came to light in Turkey and respondents stated they do not perform any elective surgery. In our survey we detected that patients for whom surgeries were postponed were followed up with an exercise programme (62%), observations of casts/braces (52%) and skillful neglect (49%). However, according to our survey patients requiring emergency orthopaedic care (joint debridement for septic arthritis and trauma cases with surgical indications) were still attended to at the earliest possible time. Also, we surveyed screening practices among surgeons and detected large differences in COVID-19 testing requests and consent issues in the preoperative preparation phase among paediatric orthopaedic surgeons. It is clear that a consensus is required for the management of emergency and postponed surgical procedures in times such as this pandemic.

In total, 40% of paediatric injuries requiring emergency department review or hospitalization occur in the home and although the number of traumas has decreased due to the pandemic, home accidents still remain a significant cause of trauma.<sup>6</sup> Paediatric trauma treatment is important at the time of the pandemic and decreasing the number of interactions during fracture treatment will help protect patients, caregivers and healthcare workers.<sup>2</sup> Although there is no consensus on requesting details of the patient's contact history, symptoms and measuring body temperature, they were reported as the major precautions taken by the paediatric orthopaedic surgeons before operating according to our survey. Considering that emergency surgical interventions such as trauma and septic arthritis are performed in such a pandemic, it is essential to establish a specific treatment protocol for continuity of services.

As mentioned above, paediatric orthopaedic practice has its own challenges: treatment of many conditions is time- (age-) sensitive, even if they are not classified as emergency. DDH and PEV are the most important examples. Therefore, we asked the respondents about their management strategies of these two diseases. There was a huge discrepancy between responses.

Respondents' approach to DDH treatment was inconsistent. The International Hip Dysplasia Institute has provided suggestions for managing DDH during the pandemic:<sup>11</sup> for infants up to six weeks of age, the Pavlik harness should be started after a positive clinical examination. USGs may be postponed. For children older than six months of age, the

Pavlik harness may be initiated, but closed reduction and casting, as well as any surgery, should be postponed. The DDH screening methods used by the respondents in our study vary considerably: 52% reported conducting routine hip USGs at one month of age and 30% postponed them until the end of the outbreak.

No official guidelines exist for the treatment of PEV during the pandemic, and considerable variation was observed in the treatment methods used by paediatric orthopaedic surgeons; 17% of respondents have postponed treatment until the end of the outbreak, but 47% have continued cast treatment once a week. The majority of the respondents postponed achillotomy, and only 7% performed achillotomy on time.

This study is not an interventional study by nature, since it involved a survey. Thus, it suffers from some limitations. Surveys are cross-sectional studies, and the current opinions of the respondents may vary on a daily basis and could change in the future. Thus, a response bias is possible. To reduce sampling bias, we distributed our survey over various online channels, to improve its visibility among our respondents. The small number of respondents is another limitation of the study. The study population was low due to the small number of TSCOS members. However, the response rate was within the confidence interval.

In conclusion, this national survey of TPOS revealed that the COVID-19 pandemic has had a detrimental effect on paediatric orthopaedic practice, although the practitioners' responses and precautions have varied broadly. The number of outpatient clinics and surgeries has decreased significantly, but telemedicine services have been shown to gain importance. Lastly, disease specific protocols are required to avoid long-term complications.

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## COMPLIANCE WITH ETHICAL STANDARDS

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### ETHICAL STATEMENT

**Ethical approval:** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent:** Informed consent was not required.

### ICMJE CONFLICT OF INTEREST STATEMENT

None declared.

## AUTHOR CONTRIBUTIONS

SEB: Study design, Writing manuscript, Literature research.

İAS: Study design, Writing manuscript, Literature research.

AŞ: Writing manuscript, Literature research, Data analysis.

OAE: Literature research, Data analysis.

BG: Literature research, Data analysis.

Mİ: Study design, Supervision, Critical review.

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