Research Paper

How did the COVID-19 Pandemic Affect Pediatric Neurologists?

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ABSTRACT

Background: In addition to physical health, pandemics affect mental health. The aim was to reveal problems encountered during the coronavirus disease 2019 (COVID-19) pandemic by pediatric neurologists and pediatric neurology residents in Turkey.
Methods: Participants were sent a survey form using Google Forms between November 05, 2020, and December 07, 2020. The form included questions about demographic information, changes to services offered, effects of the COVID-19 pandemic on patient follow-up/treatment and doctor decision-making, the Depression-Anxiety-Stress Scale 21, and the Impact of Events scale for posttraumatic stress disorder.
Results: A total of 232 pediatric neurologists and residents (mean age: 40.67 ± 7.8 years) participated. Of these 182 participants (78.4%) stated the pandemic had affected decisions during diagnosis and treatment management. A total of 222 participants completed the Depression-Anxiety-Stress Scale 21 and Impact of Events scale. Of these, points at levels that were "severe and very severe" were present for 42 participants (18.9%) for depression, 29 participants for anxiety (13%), and 31 participants for stress (14%). Impact of Events scale points were high at "severe" levels for 122 participants (55%). All scores were higher for those with individuals at risk in terms of COVID-19 in their family compared with those without individuals at risk in the family ($P < 0.05$).
Conclusions: As we emerge from the destruction caused by COVID-19, it will be beneficial not only for our professional practice but also in terms of our individual health to learn lessons that will assist in managing the next pandemic waiting in our future.

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Introduction

The pandemic is an extraordinary situation that may cause problems including access to basic needs like nutrition and housing. It is normal that this large an event will affect the provision of health services. In this period, in addition to physical health, mental health of society will be affected.[1] It is known that situations like anxiety and mood disorders become more frequent in epidemic periods.

Coronavirus disease 2019 (COVID-19) cases spread rapidly from December 31, 2019, and the first official case was reported in Türkiye on March 11, 2020, when the COVID-19 epidemic was declared a pandemic by the World Health Organization.[2,3] Precautions like travel bans and curfews and the proposed implementations caused radical changes in the lifestyle of society. The advances in technology brought the world to a different point during this most recent pandemic experience. On one hand, families and friends frequently communicated online, whereas on the other hand, news of death and misinformation rapidly spread around the whole world. Seeing this news repeatedly caused an increase in psychological stress.[4] A study in the United States showed that the prevalence of depressive symptoms was 8.5% before COVID-19, whereas it rose to 27.8% during COVID-19.[5] Attempts were made to regulate the provision of health services according to the needs of the pandemic with a rapid reaction around the world, and the operation of all fields in health were impacted by the pandemic. The inability to predict the future, emergence of variants/problems at every moment, lack of clear protocols for solutions, increased workload, and anxiety negatively affected doctors. Doctors were reported to have increased incidence of anxiety and depression symptoms with the pandemic.[6]

In developed or developing countries, pediatric neurology practice encountered situations like increased telemedicine implementations, changes to treatment regimes, and difficulty

accessing epilepsy surgery-diet clinics.[7,8] Although health authorities or institutions sometimes offered solutions to these problems, the extremely fast progress in this period pushed pediatric neurologists to find individual solutions.

Pediatric neurologists were actively included in this reorganization, like other doctors and health employees, and were individually affected by the pandemic. The aim of this study was to predict the personal experiences and problems encountered by pediatric neurologists and pediatric neurology residents during the COVID-19 pandemic in Turkey and to determine how much they were individually affected by the pandemic.

Materials and Method

Doctors serving in the field of pediatric neurology in our country were sent a survey form using Google Forms between November 05, 2020, and December 07, 2020. The form included questions about demographic information, changes to services offered, effects of the COVID-19 pandemic on patient follow-up/treatment and doctor decision-making, the Depression-Anxiety-Stress Scale 21 (DASS-21), and the Impact of Events scale (IES-R). Responses were collected anonymously. Necessary permission was obtained before the study (Ministry of Health Permission 2020-10-08T12_37_52), and Ethical Committee permission was granted (21.10.2020/ B.30.2.ODM.0.20.08/672).

The Depression-Anxiety-Stress Scale 21 was created by Lovibond and Lovibond by shortening the first and longer version of the DASS-42. The Turkish version of the DASS-21 was assessed to have psychometric features in normal and clinical samples by Sarıçam.[9-11] DASS-21 is a four-point Likert scale comprising seven questions in each dimension aiming to measure depression, stress, and anxiety. Scores obtained from each dimension are categorized as normal, mild, moderate, severe, and extremely severe.[9] Rankings of >9, >7, and >14 are qualified as cutoff values for the presence of depression, anxiety, and stress, respectively.[12]

The IES-R is a five-point Likert scale comprising 22 questions aiming to investigate possible posttraumatic stress disorder (PTSD) with Turkish validity and reliability studies completed.[13,14] The IES-R researches the degree to which problems have caused discomfort in the previous seven days. Points from 0 to 23 are accepted as normal, whereas points from 24 to 32 indicate partial PTSD or some symptoms without full PTSD.[15] Points of 33 and above represent the best cutoff value for PTSD diagnosis.[16] Points above 37 show severe impact, and points of 39 and above indicate high values that may suppress immune system functions 10 years after the event.[17]

Analysis of data was done using SPSS version 24 (IBM Corp). Assessment of data distribution was done using the Kolmogorov-Smirnov test. Quantitative data are shown as mean and standard deviation, whereas qualitative data are given as case number (n) and percentage. Comparisons between groups used the independent sample *t* test for parameters with normal distribution and the Mann-Whitney U test for parameters without normal distribution. Correlation coefficients and statistical significance of variables between groups were calculated with the Pearson correlation test or Spearman test. Analysis of parametric data for more than two variables used the ANOVA test, with posthoc analysis using the Tukey test for positive results. $P < 0.05$ was accepted as significant.

Results

During the dates of the study, 405 pediatric neurology specialists and residents were employed in our country and 232 completed the survey. Among participants, 170 were women and 58 were men. Four participants did not state their sex. Mean age of participants was 40.67 ± 7.8 (30 to 68) years, experience in the field of pediatric neurology was 7.2 ± 7 (1 to 40) years, and mean weekly working duration was 41.3 ± 8 hours. Institutions, academic degrees, and infection contact degrees are summarized in Table 1. Among those completing the survey, 148 participants (63.8%) had an individual at risk in terms of COVID-19 infection in their family. In terms of income, 132 participants (56.9%) had reduced income during the pandemic, 92 (39.6%) had no change, and eight (3.5%) had increased income. A total of 139 participants (59.9%) were assigned to the direct care of patients with COVID-19. For participants, 176 (75.8%) stated the number of patients attending pediatric neurology outpatient clinics reduced during the pandemic and 205 (88.4%) reported that patients used telephone calls, e-mail, and social media to solve their problems. Problems with provision of services were reported by 182 participants (78.4%) and included inability of patients to access the clinics, problems with electroencephalography, imaging and laboratory services, assignment of personnel to the COVID-19 wards, legal dimensions and equivalents for telemedicine implementations not being determined by the health authorities, and patients having difficulty reaching services in hospitals designated COVID-19 hospitals. Among participants, 182 (78.4%) stated the pandemic affected decisions about diagnosis and treatment management. During this process, mostly neuroimmunology and neuromuscular patient groups caused difficulty. Of participants, 147 (63.4%) made changes to patient medications due to possible side effects or difficulty with follow-up, 184 participants (79.3%) had difficulty deciding to start or continue corticosteroid or other immunotherapies, and 202 (87%) required guidelines as a basis for decisions. According to participant observations, the number of attendances linked to seizure, sudden consciousness changes, acute flaccid paralysis, and acute demyelinating diseases did not change, whereas attendance linked to headache reduced. In addition, participants observed that attendances due to peripheral facial paralysis, pseudotumor cerebri, isolated cranial nerve involvement, febrile seizure, sleep disorder, psychogenic seizure, and stroke increased.

Of the 232 participants in the study, 222 completed the DASS-21 and IES-R scales. These participants had mean depression points of 13.2 ± 8.8 (minimum 0, maximum 42), anxiety points of 8.2 ± 6.4 (minimum 0, maximum 30), and stress points of 14.6 ± 8.6 (minimum 0, maximum 40). In all areas, mean values were above the cutoff values. According to points, participants were classified as normal, mild, moderate, severe, and very severe (Table 2). The mean points on the IES-R scale were 38.6 ± 15.2 (minimum 0, maximum 88), and the results are given in detail in Table 3.

TABLE 1.

Academic Titles, Centers of Employment, and Degree of Contact With COVID-19 of Participants

n = 232		n (%)
Academic title	Professor	33 (14.2)
	Associate professor	30 (13)
	Assistant professor	17 (7.3)
	Consultant	49 (21.1)
	Resident	103 (44.4)
Center of employment	University hospital	154 (66.4)
	State hospital	61 (26.3)
	Private practice	9 (3.9)
	Private hospital	8 (3.4)
Degree of infectious contact	Was infected	21 (9)
	Family member infected	38 (16.4)
	Colleague infected	104 (44.8)
	Those around them infected	161 (69.4)
	Patient infected	110 (47.4)
	No contact	20 (8.6)

Abbreviation:
COVID-19 = Coronavirus disease 2019

When the 165 women (74.3%) and 57 men (25.7%) completing both scales are compared, women had higher depression, anxiety, stress, and IES-R points ($P < 0.05$). There were negative correlations between these scores with age and professional experience ($P < 0.05$). There was no difference in scores between those assigned and not assigned to primary care of patients with COVID-19, whereas those with individuals at risk in terms of COVID-19 in their family had higher scores than those without individuals at risk in their family ($P < 0.05$). In the contact group, DASS-21 and IES-R scores were slightly higher compared with the group without contact ($P < 0.05$) (Table 4).

Discussion

The COVID-19 pandemic is a global health crisis. Along with problems caused by the pandemic, the flow of routine life changed significantly in our country. During the time interval when the study was conducted, Turkey reported 793,129 cases, and the study was planned in the sixth month after the declaration of the pandemic.[18] With the pandemic, it is clear that the presence of uncertainty and chaos reached not only Turkey but also different corners of the world.[19] Although participants continued their occupations, they mentioned difficulties encountered, need for new developments, and alternative communication routes over time. Although living in three separate regions of the world's geography, Dr. Pavlakis and Dr. Gupta and colleagues noted the same problems encountered by Turkish pediatric neurologists in their letters from a similar period.[8,19,20] Apart from the load brought by the pandemic, it is known that health employees shared concerns about attempting to reorganize the disrupted routine health services caused by the pandemic, with variations according to country.

A study of 906 health employees from February to April 2020 in India and Singapore identified 5.3% moderate to very severe depression, 8.7% moderate to extremely severe anxiety, 2.2% moderate to extremely severe stress, and 3.8% severe psychological distress.[12] These rates were clearly high in our study group. This difference may be due to the study being performed in the sixth month of the pandemic, associated with working conditions, or this situation may be due to cultural reasons as proposed by Xiong et al.[21] A descriptive, cross-sectional, multicenter study assessing mental health of health employees during the COVID-19 pandemic in eight European countries identified 18% moderate and 17% severe/extremely severe depression, 15% moderate and 22% severe/extremely severe anxiety, and 14% moderate and 27% severe/extremely severe stress. These rates showed differences between countries.[22] Our results can be said to be close to the European data. Perhaps the reason for the low results in Singapore and India may be linked to experience gained from severe acute respiratory syndrome in recent times in East Asia. These studies show that it is not fully possible to explain the psychiatric distress developing with the pandemic by using development, economy, or educational level. In fact, very different results were identified in adjacent geographies with similar development level, whereas similar results may be obtained in distant geographies with different development levels; this leads to the consideration of the need for country-based studies about approaches to this global crisis.

Studies in Italy and Turkey found that female sex and young age were risk factors for psychological distress, similar to our study.[23-25] Female health employees must on one hand continue providing professional health services, whereas on the other hand also generally take the primary role in childcare and domestic tasks. This difference is understandable considering that face-to-face education was cancelled; they could not find caregivers due to stigmatization and the reduced social support in these areas.

A study of dentists in our country showed that vaccination reduced fear and anxiety in this group.[26] Vaccination had not begun in Turkey in the study period, when difficult restrictions like travel bans and curfews were imposed, and the feeling of burnout due to intense workload may have negatively affected our results. In fact, burnout became an important health problem among health employees during this period, and this problem was shown to further increase in employees in direct contact with patients, especially.[27]

Among our study group, 60.7% were assigned to primary care of patients with COVID-19. The DASS-21 and IES-R points of those in contact with sick individuals were clearly higher than those not in contact with these patients. There was no difference between those assigned and not assigned to primary care of patients. In the study by Hummel et al., similarly, there was no statistically significant difference found in DASS-21 scores between medical professionals exposed and not exposed to COVID-19.[22] However, scores were higher in the presence of an individual at risk in the family. Although doctors frequently accept increased risk of infection as a part of their chosen profession, they had concerns about infecting their families, including family members who were elderly, had suppressed immunity, or had chronic medical disorders.[28,29] These

TABLE 3.
Impact of Events Scale

IES-R (n = 222)	n (%)
<24 normal	27 (12.1)
24-32 mild	40 (18)
33-37 moderate	33 (14.9)
>37 severe	122 (55)

Abbreviation:
IES-R = Impact of Events scale

TABLE 2.
Depression-Anxiety-Stress Scale

n = 222	Depression n (%)	Anxiety n (%)	Stress n (%)
Normal	78 (35.1)	95 (42.8)	128 (57.7)
Mild	36 (16.2)	58 (26.1)	32 (14.4)
Moderate	66 (29.7)	40 (18)	31 (13.9)
Severe	23 (10.4)	16 (7.2)	25 (11.3)
Very severe	19 (8.6)	13 (5.9)	6 (2.7)

Abbreviation:
DASS-21 = Depression-Anxiety-Stress Scale 21

TABLE 4.
Correlation of Degree of Contact With DASS-21 and IES-R Results

Depression/Stress/Anxiety	Contact (−)	Contact (+)	Infected
Depression (P)			
Contact (−)		**0.002**	0.60
Contact (+)	**0.002**		0.073
Infected	0.60	0.073	
Stress (P)			
Contact (−)		**0.001**	0.35
Contact (+)	**0.001**		0.095
Infected	0.35	0.095	
Anxiety (P)			
Contact (−)		**0.026**	0.95
Contact (+)	**0.026**		0.059
Infected	0.95	0.059	
IES-R (P)			
Contact (−)		**0.016**	0.53
Contact (+)	**0.016**		0.33
Infected	0.53	0.33	

Abbreviations:
DASS-21 = Depression-Anxiety-Stress Scale 21
IES-R = Impact of Events scale
Bold indicates P value <0.05.

results are considered to be associated with the concerns of participants about infecting family members with the virus and high psychological distress related to this concern. Factors like the inability to cope with the deaths of colleagues, feeling of loss of control, feeling vulnerable, overwork, separation from families, and disruption of social support systems, of course, may have increased these concerns.[30] All these concerns and burnout are reported to possibly lead to bad outcomes, including suicide, among health employees.[31]

The limitations of our study are the cross-sectional design, representing a narrow group and not knowing psychiatric comorbidities of participants before the pandemic. Although the study involves these limitations, we were motivated to perform this study by the consideration that no one was more curious than us about the difficulties encountered during the pandemic and the degree of impact of these difficulties and that the results may act as a guide for measures that can be taken in the future.

Conclusions

Considering the long-term effects on health workers of PTSD caused by the severe acute respiratory syndrome epidemic affecting far fewer people, we think our results are very important in terms of acting as a guide.[30] Broad-scope studies predicting coping reactions with the pandemic on a societal basis may be a guide for appropriate coping methods for that geography in terms of intervention measures implemented by countries during possible pandemics. As we emerge from the destruction caused by COVID-19, it will be beneficial to learn lessons that will assist in managing the next pandemic waiting in our future.

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