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ARAŞTIRMA MAKALESİ **RESEARCH ARTICLE**

Being a Child with Attention Deficit Hyperactivity Disorder and Parent of Them During the Pandemic Period

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Abstract

Aim: Attention Deficit Hyperactivity Disorder (ADHD), whose main symptoms are inattention, hyperactivity and impulsivity, is one of the most common psychiatric disorders in childhood. In this study, it was aimed to evaluate the mental status and parent-child relationship of parents with children diagnosed with ADHD and to examine the relationship between these variables and the change in ADHD symptom severity during the lockdown in Turkey.

Materials and Methods: The study sample consists of 92 children and adolescents who were followed up with ADHD diagnosis at the Kocaeli University Hospital, Child and Adolescent Psychiatry Department, before the pandemic, who had the Atilla Turgay DSM-IV Based Screening and Assessment Scale filled out by their parents within the last year before the beginning of the pandemic, and who continued to be followed up during the pandemic. In the interviews conducted in 2021 during the pandemic, the parents were given a sociodemographic data form; the Atilla Turgay DSM-IV Based Screening and Assessment Scale, the Parent-Child Relationship Scale, and the Brief Symptom Inventory (BSI).

Results: A positive correlation was found between all subscales of the BSI (anxiety, depression, negative self concept, somatization, hostility, discomfort severity index, global severity index) and ADHD subtypes (attention deficit dominant type; hyperactivity and impulsivity dominant type; combined type), oppositional defiant disorder (ODD) and conduct disorder (CD) symptom severity. A positive correlation was found between a negative parent-child relationship and ADHD subtypes, ODD and CD symptom severity.

Conclusion: In conclusion, having ADHD and comorbid ODD or CD in their children increases psychological symptoms of parents. It is believed that the results of the study will be useful in approaching children diagnosed with ADHD in case the pandemic intensifies again or restrictions are required for various reasons.

Keywords: *Attention deficit hyperactivity disorder, parent-child relations, pandemic, quarantine*

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Pandemi Döneminde Dikkat Eksikliği Hiperaktivite Bozukluğu Tanılı Çocuk ve Dikkat Eksikliği Hiperaktivite Bozukluğu Çocuğun Ebeveyni Olmak

Özet

Amaç: Temel belirtileri dikkatsizlik, hiperaktivite ve dürtüsellik olan dikkat eksikliği hiperaktivite bozukluğu (DEHB), çocukluk çağında en sık rastlanan psikiyatrik bozukluklardan birisidir. Bu çalışmada; Türkiye'de COVID-19 pandemisine yönelik kısıtlamaların uygulandığı dönemde DEHB tanılı çocuğu olan ebeveynlerin ruhsal durumu ve ebeveyn-çocuk ilişkisinin değerlendirilmesi hedeflenmiştir.

Gereç ve Yöntem: Çalışma örneklemini, pandemiden önce Kocaeli Üniversitesi Tıp Fakültesi Çocuk ve Ergen Ruh Sağlığı ve Hastalıkları polikliniğinde DEHB tanısı ile takipli, dosyasında pandemi başlangıcından önceki son bir yıl içerisinde ebeveynleri tarafından doldurulmuş Atilla Turgay DSM-IV'e Dayalı Tarama ve Değerlendirme Ölçeği olan ve pandemi sürecinde takibe devam eden 92 çocuk ve ergen oluşturmaktadır. Pandemi sürecinde 2021'de yapılan görüşmelerde ebeveynlere sosyodemografik veri formu, Atilla Turgay DSM-IV'e Dayalı Tarama ve Değerlendirme Ölçeği, Ebeveyn-Çocuk İlişkisi Ölçeği ve Kısa Semptom Envanteri (KSE) verilmiştir.

Bulgular: KSE alt ölçek puanları (anksiyete, depresyon, olumsuz benlik, somatizasyon, hostilite, rahatsızlık ciddiyeti indeksi, belirti toplam indeksi) ile DEHB alt tipleri (dikkat eksikliği baskın tip; hiperaktivite-dürtüsellik baskın tip, kombine tip), karşıt olma karşıt gelme bozukluğu (KOKGB) ve davranım bozukluğu (DB) belirti şiddeti arasında pozitif anlamlı ilişki saptanmıştır. Ebeveyn Çocuk İlişkisi Ölçeği'nin olumsuz ebeveyn çocuk ilişkisi alt ölçütü ile tüm DEHB alt tipleri, KOKGB ve DB belirti şiddetleri arasında pozitif korelasyon bulunmuştur.

Sonuç: DEHB ve komorbid KOKGB veya DB tanılı çocuğu olan ebeveynlerin ruhsal belirtilerinin arttığı görülmektedir. Çalışma sonuçlarımız pandeminin tekrar şiddetlenmesi, başka pandemilerin gelişmesi ya da çeşitli nedenlerle kısıtlama uygulamalarının gerekmesi durumunda DEHB tanılı çocuklara yaklaşım açısından fikir oluşturacağı ve yazına katkı sağlayacağı düşünülmektedir.

Anahtar kelimeler: *Dikkat eksikliği hiperaktivite bozukluğu, ebeveyn-çocuk ilişkisi, pandemi, karantina*

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INTRODUCTION

Attention deficit hyperactivity disorder (ADHD), whose main symptoms are inattention, hyperactivity and impulsivity, is one of the most common psychiatric disorders in childhood (1). Although ADHD is a neurodevelopmental disorder, it is known that psychosocial factors such as parental attitudes, changes in environment and layout are also important in terms of ADHD symptom severity and prognosis (2).

The coronavirus pandemic has caused major impacts on routine life all over the world. It was first reported in China in December 2019 and in January 2020, it was named "COVID-19" by WHO (3). The disease started to spread rapidly all over the world, and the first case was seen in our country on March 11, 2020. WHO declared the COVID-19 outbreak as a "pandemic" on the same date (3). During the pandemic process, both the direct effects of the disease and the measures taken by countries in line with their own health policies have affected all people both physically and mentally. One of the age groups most affected by this process is children. During the pandemic period, there have been changes in the daily routines, school and work lives of both children and families. Within the scope of the measures taken in our country, schools were closed and distance education was started on March 23, 2020, and a curfew was imposed on those under the age of 20 on April 4, 2020 (4). While the homeschooling process started for children, some parents managed their work from home, some worked flexible working hours, and some lost their jobs. Some family members had to leave home for reasons such as illness/quarantine/death, all of which changed the daily routines of families. This situation has increased children's feelings of uncertainty, and the decrease in social support, along with the time they spend with their peers, has made the situation more difficult (5,6).

Little is known about the impact of the COVID-19 pandemic, which affected the whole world, and the period of lockdown on children with ADHD and their families. In this study, we aimed to evaluate the mental status of parents with children diagnosed with ADHD and the parent-child relationship during the period when restrictions were implemented for the COVID-19 pandemic in Turkey. In addition, it was aimed to examine the relationship between these variables and the change in ADHD, oppositional defiant disorder (ODD) and conduct disorder (CD) symptom severity of children during the pandemic. It is thought that the results of the study will provide an idea and contribute to the literature in terms of the approach to children diagnosed with ADHD in case the pandemic intensifies again, other pandemics develop, or restrictions are required for various reasons.

MATERIALS AND METHODS

The study sample consisted of patients between the ages of 6-18 who were admitted to Kocaeli University Hospital, Department of Child and Adolescent Psychiatry in the last year before the COVID-19 pandemic, who were diagnosed with ADHD according to the DSM-V diagnostic manual by a child psychiatrist, whose parents completed the Atilla Turgay DSM-IV Based Screening and Assessment Scale and who gave consent to participate in the study. Exclusion criteria were neurologic disorder, organic brain injury, depressive disorder, anxiety disorder and mental retardation. The files of the patients who met our inclusion criteria were reviewed and these patients were contacted by phone and informed about the study. Patients and their parents who agreed to participate in the study were asked to complete the forms online or face-to-face during outpatient clinic referrals.

The necessary approvals for the study were obtained from the Ministry of Health and Kocaeli University Clinical Research Ethics Committee with the number GOKAEK-2021/4.08 dated February 4, 2021. Parents and patients were asked to fill out separate informed consent forms. Another study was conducted involving the same patients and their parents who formed the study sample and was published in another journal under the name "The Effects of Lockdown on the Severity of Symptoms of Attention Deficit Hyperactivity Disorder and Disruptive Behavior Disorders and on Children/

Adolescents' Ability to Cope with Stress". This article has been shared as open access on the researchsquare website (https://www.researchsquare.com/article/rs-2785025/v1).

Data Collection Tools

Sociodemographic Data Form: The form was prepared by the researchers and information such as the patient's age, gender, with whom the patient lived, medications used, age/marital/health/educational status of the parents were questioned.

Atilla Turgay DSM IV-Based Child and Adolescent Behavior Disorders Screening and Rating Scale (Turgay Scale): The scale was developed by Turgay (1995), was given routinely to examine the severity of ADHD symptoms in children at certain intervals during outpatient clinic interviews in our department (7). The scale consists of 41 questions; which are used to screen attention deficit (AD), hyperactivity/impulsivity (HI), ODD and CD and to evaluate symptom severity. Turkish validity and reliability study was conducted by Ercan et al. (8).

Parent-Child Relationship Scale: The scale was administered to parents to assess the impact of pandemic-related restrictions on the parent-child relationship. This scale measures the level of relationship quality perceived by the parent in their mutual relationship with the child. The scale was developed by Hetherington and Clingempeel (1992) (9). Turkish validity and reliability was conducted by Aytaç et al. (2018) (10). The scale consists of 15 items and is evaluated on a 5-point likert scale. The scale has positive and negative parent-child relationship subscale. An increase in the scores obtained from the positive parent-child relationship subscale is explained as an increase in the positive relationship quality in the parent-child relationship; an increase in the scores obtained from the negative parent-child relationship subscale is explained as an increase in the negative relationship quality in the parent-child relationship (9).

Brief Symptom Inventory (BSI): BSI was used to assess whether the parents had any mental distress due to the changing order. The scale developed by Derogatis was adapted into Turkish by Şahin and Durak (1994). The scale consists of 53 items. For each answer is given scores ranging from 0 to 4. There is no defined cut-off score. The subscales consist of anxiety, depression, negative self concept, somatization, hostility, discomfort severity index, symptom total index and symptom discomfort index (11, 12).

Statistical Analysis

Statistical evaluation was performed with IBM SPSS 20.0 package program. The test for conformity to normal distribution was evaluated by Shapiro Wilk Test. Numerical variables that did not show normal distribution were given as median (25th-75th percentile) and categorical variables were given as frequency (percentages). Differences between groups were compared by Mann Whitney U Test, Kruskal Wallis One-way analysis of variance and Dunn's multiple comparison test for numerical variables that did not have normal distribution. The relationship between numerical variables was evaluated by Spearman Correlation Analysis. $p<0.05$ was considered sufficient for statistical significance.

RESULTS

A total of 92 children/adolescents with ADHD were included in the study. Sociodemographic characteristics are given in Table-1.

Table 1. Sociodemographic Characteristics Of The Group

Variables	Groups	Number (n)	Percentage (%)
Gender	**Female**	22	23.9
	Male	70	76.1
Grade	**Primary school**	13	14.1
	Middle school	52	56.5
	High school	27	29.4
Place of residence	**City center**	20	21.7
	District/village/town	72	78.3
Family type	**Nuclear family**	76	82.6
	Extended family	6	6.5
	Modern extended family	8	8.7
	Fragmented family	2	2.2
Mother education level	**Primary school**	21	22.8
	Secondary school	18	19.6
	High school	33	35.9
	University and above	20	21.7
Father education level	**Primary school**	16	17.4
	Secondary school	15	16.3
	High school	40	43.5
	University and above	21	22.8
Father occupation	**Not working**	2	2.2
	Working	90	97.8
Mother occupation	**Not working**	70	76.1
	Working	22	23 .9
Father mental illness	**No**	89	96.7
	Yes	3	3.3
Father physical illness	**No**	81	88
	Yes	11	12
Mother mental illness	**No**	85	92.4
	Yes	7	7.6
Mother physical illness	**No**	83	90.2
	Yes	9	9.8
Family monthly income	**2250 lira and below**	6	6.5
	2251-4500 lira	40	43.5
	4501 lira and above	46	50
Medication use of children/adolescents	**No**	23	25
	Methylphenidate	56	60.8
	Atomoxetine	9	9.8
	Atomoxetine and methylphenidate	3	3.3
	Other	1	1.1

No significant relationship was found between the change in ADHD subtypes, ODD and CD symptom severity compared to the pre-pandemic period and family characteristics (Table-2).

Table 2. Comparison Of Family Characteristics And Adhd Subtypes, Odd, And Cd Symptom Severity Change

Turgay Scale Subscores	Family Features				
	Mother education level[a]	Father education level[a]	Mother occupation[b]	Father occupation[b]	Family monthly income[a]
AD dominant type ADHD	0.339	0.990	0.097	0.103	0.122
HI dominant type ADHD	0.142	0.863	0.101	0.191	0.200
Combined type ADHD	0.226	0.976	0.346	0.177	0.132
ODD	0.069	0.148	0.803	0.125	0.121
CD	0.273	0.208	0.693	0.538	0.191

AD: Attention deficit, HI: Hyperactivity-impulsivity, ADHD: Attention deficit hyperactivity disorder, ODD: Oppositional defiant disorder, CD: Conduct disorder, *p<0.05, [a]Kruskal Wallis One-way Analysis was used, [b]Mann Whitney U Test was used.

Looking at how children and adolescents spent their leisure time during the pandemic; it was observed that 50% spent their leisure time studying, 43.5% spent time on the internet, 3.3% spent time doing activities with their families, and 3.3% spent time talking and doing activities with friends. When the relationship between ADHD subtypes, ODD and CD symptom severity and how children and youth spent their leisure time was examined, it was found that there was no significant difference between HI dominant and combined type ADHD and ODD, but there was a significant difference between the increase in symptom severity of AD dominant type ADHD and CD and how children and adolescents spent their leisure time. The significant difference in the AD dominant type ADHD group was due to the fact that the increase in symptom severity of the group spending time on the internet in their leisure time was significantly higher than the increase in symptom severity of the group studying. It was found that caregivers of 4.3% children/adolescents' changed during the pandemic process, and the increase in symptom severity of ODD was significantly higher in the group with a change in caregivers. Symptom severity scores for all ADHD subtypes were significantly higher in children of parents who could not continue their jobs during the lockdown period compared to children of parents who continued their jobs. It was found that 21.7% (n=20) of children and adolescents had a relative working at home during the lockdown, there was no relationship was found between having someone working at home and child symptom severity (Table-3).

Table-3 Comparison Of Pandemic Period Characteristics With Adhd Subtypes, Odd, Cd Symptom Severity

Pandemic-associated features		n (%)	AD dominant type ADHD	HI dominant type ADHD	Combined type ADHD	ODD	CD
			Median (25.-75. pers.)	Median (25.-75. pers.)	Median (25.-75. pers.)	Median (25.-75. pers.)	Median (25.-75. pers.)
How does the child - adolescent spend time at home during the pandemic?	Studying	46 (50)	8.0 (5.75 -12.0)	5.5 (2.0-12.0)	13.0 (8.75-23.5)	6.0 (2.0-10.25)	0.0 (0.0-1.0)
	Spending time on the internet	40 (43.5)	13.0 (8.0-17.0)	8.5 (3.5-14.5)	21.0 (13.25-29.5)	7.0 (3.0-12.0)	1.0 (0.0-3.0)
	Doing activities with family	3 (3.3)	9.0 (5.0-13.0)	6.0 (3.0-9.5)	13.0 (12.0-15.25)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
	Talking/doing activities with friends	3 (3.3)	15.0 (3.0- 27.25)	15.0 (1.0- 29.0)	30.0 (4.0-55.0)	7.0 (1.0-14.0)	0.0 (0.0-0.0)
	p^a value		**0.044***	0.282	0.096	0.145	**0.036***
Has there been a change in caregivers during the pandemic?	Yes	4 (4.3)	8.5 (5.0-22.5)	8.5 (2.0-21.0)	17.0 (7.0-43.5)	11.5 (8.0-18.75)	2.0 (1.25-2.75)
	No	88 (95.7)	10.0 (6.0-15.0)	7.0 (3.0-13.0)	20.0 (10.25-25.0)	6.0 (2.0-10.0)	0.0 (0.0-2.0)
	p^b value		0.934	0.719	0.978	**0.049***	0.108
Has anyone in the family been unable to continue their work during the quarantine period?	Yes	18 (19.6)	14.0 (10.0-21.0)	12.5 (7.25-16.75)	24.5 (20.75-34.0)	8.0 (4.75-12.0)	1.0 (0.0-2.25)
	No	74 (80.4)	9.0 (5.0-14.0)	6.0 (2.0-11.25)	14.0 (9.75-25.0)	6. (1.5-10.5)	0.0 (0.0-2.0)
	p^b value		**0.002***	**0.005***	**0.002***	0.109	0.262
Is there anyone working at home during the pandemic?	Yes	20 (21.7)	12.5 (4.75-17.75)	8.5 (3.25-15.25)	23.5 (8.5-30.5)	6.0 (1.0-10.75)	0.0 (0.0-2.0)
	No	72 (78.3)	10.0 (6.0-14.0)	7.0 (2.25-13.0)	18.0 (10.0-25.0)	7.0 (3.0-11.0)	0.0 (0.0-2.0)
	p^b value		0.249	0.368	0.257	0.701	0.942

AD: Attention deficit, HI: Hyperactivity-impulsivity, ADHD: Attention deficit hyperactivity disorder, ODD: Oppositional defiant disorder, CD: Conduct disorder, *p<0.05, p^a:Kruskal Wallis One-way Analysis was used, p^b:Mann Whitney U Test was used.

When the BSI scores were analyzed, a positive and significant correlation was found between the parents psychiatric symptoms and severity of ADHD subtypes, ODD and CD symptoms (Table-4).

Table 4. The Correlation Between Brief Symptom Inventory And Adhd Subtypes, Odd And Cd Symptom Severity

Variables	Brief Symptom Inventory						
Turgay Scale Subscores	**Anxiety**	**Depression**	**Negative Self Concept**	**Somatization**	**Hostility**	**Discomfort Severity Index**	**Global Severity Index**
AD dominant ADHD	0.343**	0.416**	0.411**	0.367**	0.354*	0.394**	0.386**
HI dominant ADHD	0.412**	0.443**	0.433**	0.419**	0.462**	0.461**	0.466**
Combined ADHD	0.426**	0.489**	0.481**	0.429**	0.463**	0.482**	0.482**
ODD	0.587**	0.606**	0.572**	0.404**	0.595**	0.598**	0.607**
CD	0.541**	0.572**	0.540**	0.377**	0.565**	0.560**	0.572**

AD: Attention deficit, HI: Hyperactivity-impulsivity, ADHD: Attention deficit hyperactivity disorder, ODD: Oppositional defiant disorder, CD: Conduct disorder, *p<0.05, **p<0.001, Spearman Correlation Analysis was used.

A negative and significant correlation was found between the positive parent-child relationship sub-criterion of the Parent-Child Relationship Scale and the symptom severity of CD, and a positive and significant correlation was found between the negative parent-child relationship sub-criterion and the symptom severities of ADHD all subtypes, ODD and CD (Table-5).

Table 5. The Relationship Between Parent-Child Relationship And The Symptom Severity Of Adhd Subtypes, Odd And Cd During The Pandemic

Variables	Parent Child Relationship Scale	
Atilla Turgay Subscores	**Positive parent-child relationship**	**Negative parent-child relationship**
	r (p)	**r (p)**
AD dominant ADHD	-0.118 (0.264)	0.245 (0.018)
HI dominant ADHD	0.016 (0.879)	0.519 **(<0.001*)**
Combined ADHD	-0.058 (0.581)	0.448 **(<0.001*)**
ODD	-0.195 (0.063)	0.400 **(<0.001*)**
CD	-0.219 **(0.036*)**	0.302 **(0.003*)**

AD: Attention deficit, HI: Hyperactivity-impulsivity, ADHD: Attention deficit hyperactivity disorder, ODD: Oppositional defiant disorder, CD: Conduct disorder, r: Correlation coefficient, *p<0.05, Spearman Correlation Analysis was used.

DISCUSSION

In our study, it was planned to examine the mental states and parent-child relationships of parents of children/adolescents diagnosed with ADHD before the pandemic, during the period when restrictions such as working from home, distance education and determining the hours of going out according to age groups were implemented in Turkey for COVID-19 pandemic. In addition, it was aimed to evaluate the relationship between these variables and the change in ADHD, ODD and CD symptom severity compared to the pre-pandemic period. No significant difference was found between sociodemographic characteristics and the change in ADHD subtypes, ODD and CD symptom severity. Among the pandemic-related characteristics, it was found that there was a significant increase in the severity of AD dominant type ADHD and CD symptom severity in the group who spent their leisure time on the internet. It was observed that the increase in symptom severity was statistically significant with the change in caregivers during the pandemic period, and in all subtypes of ADHD in children whose parents left their jobs. A positive correlation was found between all subscales of the BSI and the increase in symptom severity in ADHD subtypes, ODD and CD. When the parent-child relationship was examined, an inverse relation-

ship was found between positive parent-child relationship and the symptom severity score of CD, and a relationship in the same direction was found between negative parent-child relationship and ADHD subtypes, ODD and CD symptom severity increase.

In our study, it was observed that the subjects stated that they spent their leisure time most frequently studying and secondly on the internet. Due to the transition to distance education during the lockdown period, children/young people attended online courses for approximately 8 hours a day, which may have led to these results. At the same time, school closures and lockdowns greatly affected the lifestyles of children and adolescents by limiting their physical activities. Xiang et al. (2020) reported that there was a decrease in physical activity and an increase in screen exposure during the COVID-19 pandemic (13). Similarly, Sciberras et al. (2020) reported that screen exposure such as watching TV, playing games, and social media increased during the pandemic period in children/adolescents with ADHD and that there was a deterioration in their daily lives due to changes in sleep habits (5). In our study, the increase in ADHD and CD symptom severity was found to be statistically significant in the group who spent their leisure time on the internet. A study on internet addiction show that problematic internet use is generally associated with ADHD and related symptoms (14). Yen et al., found that the subtype most frequently associated with internet addiction among ADHD symptoms was attention deficit (15). Children and young people diagnosed with ADHD may have decreased attention span due to difficulties in following online courses or difficulties in limiting internet use, or they may have been exposed to violent scenes more due to games played or videos watched as a result of uncontrolled use, and the severity of CD symptoms may have increased.

It is known that changes in daily routines, lack of interpersonal and social interaction caused by the pandemic are potential risk factors for mental health problems. In our study, it was found that there was a significant difference between the change in the caregivers of children/adolescents during the pandemic and increase in the severity of ODD symptoms. It has been reported that familial factors such as parents' warmth towards the child, negative/ineffective disciplinary methods or consistency of disciplinary methods have a significant effect on the course of ADHD as well as the development of comorbid diagnoses including ODD and CD (16). The change in caregivers may have led to a change in the previously applied rules or inconsistent approaches in children/youth with ODD who have problems in following the rules, and symptom severity may have increased due to this situation. It was found that symptom severity increased significantly in all subtypes of ADHD in children of parents who left their jobs during the pandemic. In our study, it was observed that it was mostly fathers who could not continue their work during the pandemic. In this case, it was thought that children diagnosed with ADHD at home may have stayed together more due to the fathers being at home and the restriction practices and distance education processes, and the severity of ADHD symptoms of children/youth may have increased due to communication or adaptation problems between fathers and their children. At the same time, problems such as feelings of failure due to dismissal, economic difficulties, and inability to socialize may have increased the fathers' stress and caused them to react more impulsively and aggressively to their children's behaviors and not to manage the process well. There are few studies on father-child relationships of children with ADHD. (17-19). In one study, it was found that children diagnosed with ADHD interacted less actively with their fathers than those without ADHD, and that children with ADHD reported more negative reports, more conflict and less positive communication in fatherhood and father-child interactions compared to fathers (19).

In our study, a significant correlation was found in the same direction between all of the BSI subscale scores of the parents during the pandemic period and the increase in the severity of ADHD all subscales, ODD and CD symptoms. Studies have found that parents of children with ADHD are at risk of experiencing more mental disorders (20). In the literature, there are stud-

ies reporting that anxiety, depressive disorder, panic disorder, agoraphobia, somatization, phobia, obsession, paranoid symptoms, sleep problems, interpersonal sensitivity and anger control problems are observed more frequently in the families of children with ADHD (20-23). ADHD is an important stressor for families due to its chronic nature. In a study, it was reported that parents of children with ADHD experienced more parenting stress than the control group and the severity of ADHD symptoms was associated with parenting stress. It was also observed that accompanying behavioral problems in children, depressive symptoms of the parent and male gender of the child led to more parenting stress (23). In our study, it may be considered that parenting stress increased and parents' mental problems increased with the fact that most of the group was male and the severity of ADHD, ODD and CD symptoms increased. Patterson defined a dynamic cycle between parental stress and aggression of child characterized by each problem increasing the other (24). Mothers of children with ADHD seem to be particularly more prone to such a cycle (25). In a study by Westrupp et al. (2023) was found that parents had higher depression, anxiety and stress during the pandemic period (6). In this period when mental problems increase even in parents of children with normal development, it is not surprising that the level of stress increases and mental problems are more common in parents of children with ADHD and behavioral problems due to reasons such as decreased social support, school closures, some parents working from home or being laid off from work.

In our study, a significant relationship was found between negative parent-child interactions and increased symptom severity of all subtypes of ADHD. Studies on parent-child interactions with families whose children have ADHD symptoms have consistently found above-average parenting stress and conflicted parent-child interactions, which have been associated with increased authoritarian parental attitude and decreased warmth and/or positivity (26, 27). It has been reported that parents of children with ADHD often pay selective attention to hyperactivity and impulsive behaviors; as a result, they give more verbal directives, orders, scoldings and punishments, have the belief that they cannot change their children's reactions and behaviors related to behavioral problems and therefore may tend to react more negatively to their children, focus more on problems and show more negative parenting attitudes (28, 29). It has been observed that parents of children with ADHD behave less rewarding than parents of children without ADHD (30). It is thought that interactions during parenting have a bidirectional relationship with the child's behavior; less positive and more negative parenting practices have been associated with the diagnosis of ADHD in childhood (31). More severe ADHD symptoms and the presence of comorbidity were found to be associated with increased family conflict, decreased family harmony, and authoritarian and punitive parenting style (32, 33). In a study conducted with children diagnosed with ADHD in Egypt during the COVID-19 period, it was reported that 62.7% of parents inflicted verbal and physical violence on their children, and there was a significant change in behavioral and psychological symptoms of children compared to before the pandemic (34). Shah R. et al. reported that many parents had increased negative emotions and unwanted behaviors such as impatience, yelling, slapping, verbal abuse and punishing their children (35).

In our study, a relationship in the same direction was found between negative parent-child relationship and increased severity of ODD symptoms. In the literature, it has been observed that parents of children with a diagnosis of ODD in addition to ADHD experience higher levels of parental stress, have more dysfunctional interactions with their children, evaluate their children as more difficult, and report lower relationship quality with their children compared to mothers of children diagnosed with ADHD alone (16,36). Green et al. (2007) also found that in a clinical sample of children previously diagnosed with ADHD, a diagnosis of ODD was associated with poor relationship quality between parents and children (37). A significant association was found between CD accompanying ADHD and negative parent-child relationships such as mother's

warmth, lack of involvement in the relationship and father's negative/ineffective discipline (16). It has been shown that strict and inconsistent parental attitude is among the main factors in the development of CD (38). In our study, a negative relationship was found between positive parent-child relationship and severity of CD symptoms, and a positive correlation was found between negative parent-child relationship and increased severity of CD symptoms. In the literature, it has been reported that positive parenting behavior inversely predicts CD in a manner compatible with our study (39, 40). The limitations of our study include the relatively small number of our study group, the fact that the mental status of the parents was not evaluated with clinical interviews or structured diagnostic methods but only symptom screening with BSI, the mental status and parent-child relationship of the parents were not compared with the healthy control group, the forms were filled out only by the parents, the severity of the negative parent-child relationship was not evaluated whether it was in the dimension of abuse, and the diagnosis of ADHD, which has a high potential to affect genetic transmission and parent-child relationship, was not evaluated in the parents. Increasing the sample size and clinically evaluating parental mental health, which may better predict parent-child relationship, may increase the power of future studies.

CONCLUSION

In conclusion, having ADHD and comorbid ODD or CD in their children increases the stress of parents. During the pandemic period, parents decreased the frequency of meeting with extended family and friends for various reasons such as restriction rules and concerns about infecting family elders and other people, and lacked a social support system. It can be predicted that children with ADHD who cannot participate in social activities and have difficulty in following online courses due to lockdowns and distance education process spend more time with the internet, stay away from their friends and experience more conflict with their parents. The pandemic and the restrictions imposed have led parents, especially fathers who spent most of the day at work before the pandemic, to spend more time at home with their children. This may have caused parents to be more exposed to their children's ADHD, ODD and CD symptoms and to experience difficulties in managing this new process. Due to these difficulties, parents' self-confidence and satisfaction in their relationships with their children may have decreased. In addition, parents had to make extra efforts to ensure that these children, who had serious problems with academic issues such as listening to lectures and doing homework, did not fall behind due to online education. All these reasons may have affected the mental health of parents and their interactions with their children. Therefore, it is important to assess the mental health of the parents and provide good psychoeducation to the parents during the evaluation in child mental health outpatient clinics. Providing children with a regular, consistent home environment and supporting the mental health of parents will contribute to the improvement of ADHD and ODD/CD symptoms of children.

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