VAN TIP DERGİSİ Medical Journal

CLINICAL RESEARCH / KLİNİK ÇALIŞMA

Van Tıp Derg. 30(2): 169-177,2023
DOI:10.5505/vtd.2023.08456

The Relationship of OCD And OCD Symptoms With The Thought Action Fusion in Children and Adolescents During The Pandemic Period

Pandemi Döneminde Çocuk ve Ergenlerde OKB ve OKB Belirtilerinin Düşünce Eylem Kaynaşması ile İlişkisi

İrem Damla Çimen, Merve Dilli Gürkan, Şeyma Nur Kalaycı, Sinem Yavuz, Aysel Denktaş Özdemir, Nursu Çakın Memik

Kocaeli Üniversity, School of Medicine, Department of Child and Adolescent Psychiatry, Kocaeli, Turkey

Abstract

Introduction: Thought-action fusion (TAF) is one of the cognitive distortions that can be seen in obsessive-compulsive disorder (OCD) according to learning theory and is defined as the perception that thought and action are equivalent. The aim of our study was to examine the effects of pandemic-related characteristics on OCD symptoms and severity of symptoms during the restriction period and to evaluate the relationship between OCD and TAF and its sub-dimensions during the pandemic.

Materials and Methods: A total of 69 patients aged 7-18 years, who applied to our outpatient clinics and were diagnosed with OCD, were included in the study. Sociodemographic data form, Children's Yale Brown Obsessive Compulsive Scale (CY-BOCS) and Thought Action Fusion Scale for Children were used in the study.

Results: The CY-BOCS obsession score was found significantly higher in cases with an increase in the time spent with the family during the pandemic, obsession and compulsion scores in those with an increase in the cleaning efforts related to the pandemic, and compulsion score in those with an increase in the behaviors performed for the purpose of preventing virus transmission. The TAFTOTAL score was found to be significantly higher in females, and the TAFSELF subscale score was found to be significantly higher in patients over 12 years old.

Conclusion: The researches on the concept of TAF, whose importance has begun to be noticed with current approaches, and the limited information obtained, cause the additional methods that can be applied in this field to be limited. In the light of current information, TAF appears to have a critical importance in the onset and maintenance of OCD. It is thought that early diagnosis and intervention before the erroneous evaluation and belief areas of OCD become chronic will be important in the prognosis of OCD.

Keywords; Obsessive-compulsive disorders; children; adolescents; psychology, cognitive; COVID-19.

Özet

Amaç: Düşünce eylem kaynaşması (DEK), öğrenme kuramına göre obsesif kompulsif bozuklukta (OKB) görülebilen bilişsel çarpıtmalardan biridir ve düşünce ile eylemin birbiri ile eşdeğer algılanması olarak tanımlanmaktadır. Çalışmamızın amacı; ülkemizde COVID-19 pandemisine yönelik kısıtlamaların uygulandığı dönemde pandemi ile ilişkili özelliklerin OKB belirtileri ve belirtilerin şiddeti üzerine etkilerinin incelenmesi ve pandemi sürecinde OKB ile DEK ve alt boyutları arasındaki ilişkinin değerlendirilmesidir.

Gereç ve Yöntem: Çalışmaya polikliniklerimize başvuran, DSM-5 tanı kriterleri göre OKB tanısı almış, 7-18 yaş arası toplam 69 hasta dahil edilmiştir. Çalışmada sosyodemografik veri formu, Çocuklar için Yale Brown Obsesif Kompulsif Ölçeği (CY-BOCS), Çocuklar için Düşünce Eylem Kaynaşması Ölçeği kullanılmıştır.

Bulgular: Çalışma grubunda en sık kirlenme obsesyonu ve yıkama/temizleme kompulsiyonu olduğu saptanmıştır. Pandemi sürecinde aile ile geçirilen sürede artış olan olgularda CY-BOCS obsesyon puanı, pandemi ile ilişkili temizlik uğraşılarında artış olanlarda CY-BOCS hem obsesyon hem kompulsiyon puanı, virüs bulaşmaması amacıyla yapılan davranışlarda artış olanlarda CY-BOCS kompulsiyon puanı istatistiksel açıdan anlamlı derecede yüksek bulunmuştur. Kız cinsiyette DEK ölçeği TAFTOTAL puanı, 12 yaş üstü olan hastalarda TAFSELF alt ölçek puanı anlamlı düzeyde yüksek saptanmıştır.

Sonuç: Güncel yaklaşımlarla beraber önemi fark edilmeye başlanan DEK kavramı hakkında yapılan araştırmalar ve elde edilen bilgilerin kısıtlılığı, tedavide bu alanda uygulanabilecek ek yöntemlerin de kısıtlı kalmasına neden olmaktadır. Mevcut bilgiler ışığında DEK'in OKB'nin ortaya çıkmasında ve belirtilerinin sürdürülmesinde kritik bir önemi olduğu görülmektedir. OKB'ye ilişkin hatalı değerlendirme ve inanç alanları kronikleşmeden erken teşhis ve müdahale yoluna gidilmesinin, OKB'nin prognozunda önem taşıyacağı düşünülmektedir.

Anahtar Kelimeler: Obsesif-kompulsif bozukluk; çocuk; ergen; bilişsel psikoloji; COVID-19.

***Corresponding Author:** İrem Damla Çimen Kocaeli Üni. Tıp Fak. Çocuk ve Ergen Ruh Sağlığı AD.
E-posta: damlamanga@gmail.com **Orcid:** İrem Damla Çimen 0000-0002-5312-6681, Merve Dilli Gürkan 0000-0002-0528-6373, Şeyma Nur Kalaycı 0000-0002-1586-3306, Sinem Yavuz 0000-0001-8410-8964 Aysel Denktaş Özdemir 0000-0003-1124-6965, Nursu Çakın Memik0000-0001-9029-3457

Received: 08.11.2022, Accepted: 05.04.2023

Introduction

The COVID-19 pandemic first appeared in China, and quickly spread around the world (1). In order to prevent transmission, many restrictions have been applied in social, work and school areas. It has been decided to expand the practice of working from home in Turkey, to suspend formal education in schools and then to switch to online education. In addition, curfew restrictions were introduced, including children and adolescents. With the start of vaccination in the community, suggestions such as wearing masks, paying attention to distance and hygiene rules continue, but restrictions have been removed. OCD has been tried to be explained with theories such as psychoanalytic theory, learning theory and attachment theory. According to learning theory OCD is caused by cognitive distortions, misprocessing of information and accordingly dysfunctional, biased thinking (2). Cognitive distortions include titles such as arbitrary inference, overgeneralization, magnification and minimization, selective abstraction, discounting the positive, dichotomous thinking, emotional reasoning, should statements, labeling, thought-action fusion (TAF) (3,4). It has been reported that TAF can be effective in many disorders such as anxiety disorders, depression and eating disorders, as well as play a role in the development of OCD. TAF is recognized as an important aspect of magical thinking that leads to OCD symptoms by raising or neutralizing distress levels (5). TAF can be defined as the perception of thought and action as equivalent to each other or the giving of an exaggerated negative power to thought (6). It was thought that examining the relationship between OCD and TAF in children and adolescents would be important in the early diagnosis and treatment of psychopathology. The aim of our study is to evaluate the effects of the pandemic and the changes in routines on OCD symptoms and symptom severity during the period when the restrictions regarding the pandemic were implemented in Turkey, and the relationship between OCD and TAF and its sub-dimensions during the pandemic.

Materials and Methods

The sample size to be included for the study was calculated as at least 54 based on a 95% confidence probability and a 5% margin of error and an effect size of 0.5. Patients between the ages of 7-18 who accepted to participate in the study who applied to KUFM, Department of Child Psychiatry during the pandemic process in face-to-face/online form were included in the study. Being younger than 7 or older than 18 years of age, not being diagnosed with OCD according to the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders-5 of the American Psychiatric Association (DSM-5), failure to complete the necessary evaluations, not completing the forms or not participating in the study were determined as the exclusion criteria of the study. In addition, psychotic disorder, bipolar disorder, autism spectrum disorder, moderate to severe mental retardation comorbidity, and illiteracy were determined as exclusion criteria of the study as well. A child psychiatrist was interviewed with the child/adolescents. After obtaining consent for the study, the parents of the cases diagnosed with OCD according to DSM-5 at the time of application and the cases diagnosed with OCD before the pandemic were asked to fill in the sociodemographic data form online. The Yale Brown Obsessive Compulsive Disorder Scale for Children was administered by a child psychiatrist. Since the CY-BOCS was not applied to the patients before the pandemic, it was determined according to the patients' self evaluations by asking themselves whether the severity of obsessions and compulsions changed or remained the same. In addition, children/adolescents were asked to fill out the TAF Scale to assess whether they think their thoughts were causing good or bad things to happen to others.

Data Collection Tools

Socioemographic data form: This form, prepared by the researchers, consisted of questions about children's age, gender, school information, parents' age, marriage, health and education status, and the pandemic.

Children's yale-brown obsessive compulsive scale (CY-BOCS): The semi-structured scale based on the clinical interview was developed by Goodman et al. (7). The reliability study of the scale in the Turkish sample was carried out by Yücelen et al. (8). This scale is graded between 0-40 points, 0-7 points indicates subclinical, 8-15 points mild, 16-23 points moderate, 24 points and above indicate severe OCD symptoms.

Thought-action fusion scale for children (TAFIC): The scale, which consists of 19 questions and answered as true or false, was developed by Evans et al. (9). The scores that can be obtained from the evaluation of the scale range from 0 to 19. A high score is interpreted as an increase in TAF and is evaluated negatively. The

scale consists of four subscales; likelihood-other people positive events (TAFPOS), likelihood-other people negative events (TAFNEG), likelihood-self (TAFSELF), and harm avoidance (TAFHARM). The Turkish validity and reliability study of the scale was carried out by Tarakçıoğlu et al. (10).

Ethical consent: Permission for the study was obtained from Kocaeli University Faculty of Medicine (KUFM) Clinical Research Ethics Committee with the decision numbered GOKAEK-2020/14.03 dated 13/08/2020. The study was carried out in accordance with the Declaration of Helsinki Principles. Written informed consent was obtained from the participants.

Statistical analysis: All statistical analyses were performed using IBM SPSS for Windows version 20.0 (IBM Corp., Armonk, NY, USA). Kolmogorov-Smirnov tests were used to test the normality of data distribution. Normally distributed numerical variables are given as mean±standard deviation, non-normally distributed numerical variables are given as median (25th-75th percentile), and categorical variables are given as frequency (percentage). Comparisons of normally distributed continuous variables between the materials/groups were performed using the Student's t test and One Way Analysis of Variance. Comparisons of nonnormally distributed continuous variables between the groups were performed using the Mann Whitney U Test and Kruskal Wallis One Way Analysis of Variance. Tukey and Dunn tests were used for multiple comparisons. Comparisons of cathegorical variables between the groups were performed using the ChiSquare test. Two-tailed $p<0.05$ was considered statistically significant.

Results

A total of 69 OCD patients, 34 girls and 35 boys, were included in the study. The mean age of the group was 13.84±2.2 years, 60.8% of them were 12 years old and over. The mean age of their mothers was 41.43±5.08, and the mean age of their fathers was 45.04±4.49. 81.2% of the group lived as a nuclear family, 15.9% of the patients were diagnosed with OCD less than 1 year ago and at least one relative of 24.6% had a diagnosis of OCD. While 36.2% of the cases (n=25) had ADHD comorbidity, there was no comorbidity in the other cases. The group's mean CY-BOCS scale obsession score was 9.0±3.0, compulsion mean score was 9.5±3.2, obsession and compulsion total score were 18.6±5.8, and there was no significant difference between CY-BOCS scale sub-scores and sociodemographic characteristics. It was observed that both obsessions and compulsions were present in the entire sample. The most common obsession is contamination, and the compulsion is washing/cleaning. According to the self-evaluations of the cases, it was observed that the severity of their obsessions increased in 30.4% of the group during the pandemic. The severity of compulsions increased in 23.2% of the group. The obsession and compulsion subgroup changes according to the patients' self-evaluations in line with the CY-BOCS scale are shown in Tables 1 and 2. When the treatment practices were evaluated, it was determined that 91.3% of the cases were applied pharmacotherapy and SSRI treatment was used alone in most of the cases (68.2%). In 31.7% of the cases using SSRI, the dose was increased during the pandemic, the treatment was started in 28.5%. It was found that in 15% of the cases using SSRI and antipsychotic combination therapy, antipsychotic treatment was added during the pandemic.

Table 1: Changes in obsession subgroups

Obsessions	Increased % (n)	Decreased % (n)	Same % (n)
Contamination	24.6 (17)	4.3 (3)	50.7 (35)
Aggressive	7.2 (5)	5.8 (4)	36.2 (25)
Sexual	4.3(3)	8.7 (6)	18.8 (13)
Hoarding / Saving	1.4 (1)	4.3 (3)	20.3 (14)
Magical thoughts/Superstitious	2.9 (2)	1.4 (1)	20.3 (14)
Somatic	7.2 (5)	4.3 (3)	23.2 (16)
Religious	7.2 (5)	7.2 (5)	34.8 (24)
Miscellaneous	1.4 (1)	2.9 (2)	24.6 (17)

Table 2: Changes in compulsion subgroups

Compulsions	Increased % (n)	Decreased % (n)	Same % (n)
Washing/ Cleaning	17.4 (12)	15.9 (11)	39.1 (27)
Checking	2.9 (2)	10.1 (7)	49.3 (34)
Repeating Rituals	4.3 (3)	11.6 (8)	39.1 (27)
Counting	1.4 (1)	4.3 (3)	24.6 (17)
Ordering / Arranging	0 (0)	4.3 (3)	31.9 (22)
Hoarding / Saving	2.9 (2)	1.4 (1)	23.2 (16)
Excessive Games/ Superstitious Behaviors	1.4 (1)	2.9 (2)	11.6 (8)
Rituals involving other persons	5.8 (4)	5.8 (4)	23.2 (16)
Miscellaneous	5.8 (4)	1.4 (1)	40.6 (28)

Looking at the features related to the pandemic; it was learned that they spent most of their time using the internet (71%), studying (18.8%) or sharing with their families (10.1%). In 95.7% of the group, there was no change in caregivers, and 71% did not experience any dismissal in their families. It was learned that 44.8% of the sample talked about the pandemic frequently/very frequently at home. During the pandemic, 72.5% of the young people had an increase in cleaning efforts, 65.2% had concerns about virus transmission, 71% had some preventive behaviors to avoid being infected. It was learned that 71% of the group had someone they knew had COVID-19 infection, while 24.6% of them had someone they knew died due to COVID-19. The groups with statistically significant differences between the patients' CY-BOCS obsessions, compulsions and total scores and the variables associated with the pandemic are shown in Table 3. TAF scale TAFTOTAL score was found to be significantly higher in female than male ($p<0.05$). A significant relationship was found between TAFSELF and CY-BOCS obsession score obsession and compulsion total scores (Spearman rho=0.283 p=0.01), one of the TAF subscale scores. a weak correlation was found. The relationship between TAF subscale scores and types of obsessions and compulsions is shown in Table 4. TAFSELF subscale score was found to be significantly higher in patients older than 12 years old (Mann-Whitney U, U=563.5, p=0.038).

Discussion

In our study, the effect of the pandemic on patients diagnosed with OCD and the relationship of OCD symptoms with TAF sub-dimensions were examined. The most common obsession was contamination, and the compulsion was washing/cleaning. Our finding is consistent with the literature, and in a study conducted with adolescents diagnosed with OCD during the pandemic, it was found that contamination obsession and cleaning compulsion were observed most frequently (11). In our study, it was found that the severity of obsessions increased in 30.4% of the cases during the pandemic. In a study conducted in Israel, the rate of improvement in OCD symptom severity was 55%, and the level of improvement was found to be significant. In the study, all of the patients were already receiving pharmacological treatment (12). Continuing the psychopharmacological treatments of the patients participating in our study during the quarantine and continuing the psychotherapeutic intervention with online interviews may have prevented the increase in OCD complaints. In a study, an increase in symptom severity was reported in 54%. In this study by Tanır et al., the mean CY-BOCS total scores before and during the pandemic were 14.24±5.05 and 19.00±6.89, respectively. In this study, although a significant increase was found in only contamination obsessions and cleaning compulsions. Worsening of symptom severity was found to be related to the duration of illness, the level of daily busyness about COVID-19, the state of doing research about COVID-19, and the diagnosis of COVID-19 in their relatives (11). A study conducted by Nissen et al. reported a worsening of OCD symptoms (54.9%) in both clinical and community samples during the pandemic, although COVID-19 had a significant effect on worsening aggression and sexual obsession and compulsions, its relationship with contamination obsession and cleaning compulsion could not be shown (13). In two studies conducted with adolescents, a worsening of OCD symptoms was reported with the pandemic. In a community-sampled study conducted by Darvishi,

Table 3: The relationship between the changes associated with the pandemic process and CY-BOCS scores

Features	Groups	Obsession Score	p	Compulsion Score	p	Obsession and Compulsion Total Score	p	Test
Stay-at-home time in the pandemic	Same Increased Decreased	9.00±2.83 10.67±3.27 6.00±0.00	0.486	9.00±1.41 9.33±3.39 6.00±0.00	0.716	18.00±1.41 20.00±6.36 12.00±0.00	0.607	Kruskal-Wallis
Time spent with family	Increased Decreased/ Same	9.77±3.03 7.50±2.59	0.004*	10.02±3.55 8.59±2.21	0.086	19.79±6.18 16.09±4.25	0.014*	Mann-Whitney U
Frequency of meeting with friends during the pandemic	Never/Rare Often/Very often	8.86±3.63 10.25±1.89	0.657	7.14±3.63 10.00±0.82	0.361	16.00±7.07 20.25±2.63	0.522	Kruskal-Wallis
Attending online lessons regularly during the pandemic	Yes No	9.38±2.90 13.00±2.83	0.799	8.75±3.32 11.00±1.41	0.911	18.13±6.03 24.00±4.24	0.861	Mann-Whitney U
Caregiver change in the pandemic	Yes No	9.00±0.00 11.50±2.12	0.246	10.00±0.00 10.50±0.71	0.246	19.00±0.00 22.00±2.83	0.271	Mann-Whitney U
Doing research about the pandemic	Yes No	11.33±4.04 11.50±2.12	0.928	10.67±2.08 10.50±0.71	0.165	22.00±2.83 22.00±6.08	0.420	Mann-Whitney U
Frequency of talking about the pandemic at home	Never/Rare Often/Very often	10.67±2.08 9.00±0.58	0.956	10.33±0.58 9.00±1.16	0.744	21.00±2.65 18.00±1.73	0.815	Kruskal-Wallis
People who had COVID-19 infection from acquaintances	Yes No	9.50±0.71 13.00±4.95	0.973	10.00±0.00 11.00±2.83	0.359	19.50±0.71 24.00±7.78	0.522	Kruskal-Wallis
People who died due to COVID-19 from acquaintances	Yes No	9.00±3.22 11.50±2.12	0.528	10.00±2.65 10.50±0.71	0.264	19.00±5.86 22.00±2.83	0.378	Kruskal-Wallis
Increase in cleaning efforts	Yes No	9.74±3.01 7,21±2,44	0.002*	10.24±3.29 7,79±2,37	0.004*	19.98±5.86 15,00±4,20	0.002*	Mann-Whitney U
Worry about virus transmission	Yes No	9.00±2.73 11.50±2.12	0.177	10.00±2.69 10.50±0.71	0.224	19.00±5.03 22.00±2.83	0.155	Mann-Whitney U
Behaviors to prevent virus transmission	Yes No	9.41±3.08 8.15±2.90	0.117	10.08±3.15 8.30±3.18	0.046*	19.49±5.70 16.45±5.86	0.051	Mann-Whitney U

Table 4: The relationship between thought-action fusion subscale scores and types of obsessions and compulsions.

Obsessions		TAFPOS		TAFNEG		TAFSELF		TAFHARM		TAFTOTAL	
		Median (2575p)	p	Median (25-75p)	p	Median (2575p)	p	Median (25-75p)	p	Median (25-75p)	p
Sexual	Yes	0 (0-1)	0.43	0 (0-2)	0.01*	0 (0-2)	0.09	0 (0-2)	0.94	2.5 (0-7.25)	0.14
	No	0 (0-1)		0 (0-0)		0 (0-1)		0 (0-0)		0 (0-4)	
Contamination	Yes	0 (0-1)	0.70	0 (0-1)	0.93	0 (0-2)	0.36	0 (0-1)	0.26	1 (0-6)	0.42
	No	0 (0-1)		0 (0-1)		0 (0-1)		0 (0-0)		0 (0-2.25)	
Aggressive	Yes	0 (0-1)	0.98	0 (0-1)	0.34	0 (0-2)	0.92	0 (0-1)	0.34	0.5 (0-6)	0.74
	No	0 (0-1)		0 (0-0)		0 (0-1)		0 (0-0)		0 (0-4)	
Hoarding/Saving	Yes	0 (0-1)	0.73	0 (0-0.5)	0.80	0 (0-3)	0.93	0 (0-1.25)	0.96	0 (0-6.25)	0.90
	No	0 (0-1)		0 (0-1)		0 (0-1)		0 (0-1)		1 (0-4)	
Magical Thoughts/Superstitious	Yes	0 (0-1.5)	0.18	0 (0-2.5)	0.26	1 (0-2.5)	0.12	0 (0-1.5)	0.83	2 (0-6)	0.10
	No	0 (0-1)		0 (0-0.75)		0 (0-1)		0 (0-0.75)		0 (0-4)	
Somatic	Yes	0 (0-1)	0.74	0 (0-1.75)	0.55	0 (0-2)	0.46	0 (0-0)	0.40	1 (0-5.5)	0.74
	No	0 (0-1)		0 (0-1)		0 (0-1)		0 (0-1)		0 (0-4.5)	
Religious	Yes	0 (0-1.25)	0.03*	0 (0-2)	0.06	0 (0-2.25)	0.23	0 (0-2)	0.02*	2.5 (0-6.25)	0.02
	No	0 (0-0)		0 (0-0)		0 (0-1)		0 (0-0)		0 (0-2)	
Miscellaneous	Yes	0 (0-1)	0.70	0 (0-1.75)	0.51	0 (0-1.75)	0.92	0 (0-2)	0.08	0 (0-6.75)	0.77
	No	0 (0-1)		0 (0-1)		0 (0-1.5)		0 (0-0)		1 (0-4)	
Compulsions											
Washing/Cleaning	Yes	0 (0-1)	0.27	0 (0-1)	0.15	0 (0-2.25)	0.17	0 (0-2)	0.01*	1 (0-6)	0.06
	No	0 (0-0)		0 (0-0)		0 (0-1)		0 (0-0)		0 (0-2)	
Excessive Games/ Superstitious Behaviors	Yes	1 (0-1)	0.17	1 (0-3)	0.00*	2 (0-3)	0.00*	1 (0-2)	0.03*	6 (0-8)	0.01*
	No	0 (0-1)		0 (0-0)		0 (0-1)		0 (0-0)		0 (0-3)	
Checking	Yes	0 (0-1)	0.95	0 (0-1)	0.78	0 (0-1)	0.46	0 (0-1)	0.81	0 (0-6)	0.88
	No	0 (0-1.25)		0 (0-1)		0 (0-2)		0 (0-0.25)		0.5 (0-4.25)	

it was shown that participants experienced OCD symptoms at a rate as high as 67.3% (16). In a Spearman rho=0.289 P=0.01) and Cy-BOCS study by Seçer et al. in Turkey, it was shown that fear of COVID-19 has a significant effect on OCD symptoms. In addition, it was stated that the pandemic increased the complaints of depression and anxiety in adolescents, which led to an increase in OCD symptoms (15). Storch et al. stated that COVID-19 had less of an effect on the symptoms of OCD patients younger than 18 years of age compared to adults. It has been hypothesized that the implementation of the pandemic-related leave-of-home restrictions may have enabled the youth to continue to focus on the recommended exposure exercises during the treatment process and may have been less exposed to environmental stressors such as peer bullying and academic difficulties in the outside world (16). In our study, being away from the school environment, which is generally an important source of stress for young people during the restriction period, also had a positive effect on their stress and anxiety levels, as well as the absence of cases such as severe COVID-19 or death due to COVID-19 in the families of young people. may also have caused the OCD symptom severity to not increase significantly. In OCD,

people tend to interpret these intrusive thoughts as catastrophic and attach excessive importance to thoughts (6). Six cognitive distortions are emphasized: exaggerated sense of responsibility, importance attributed to thoughts, control of thoughts, exaggerated perception of threat, intolerance of uncertainty, and perfectionism (17). Rachman argued that an exaggerated sense of responsibility leads to a catastrophic misinterpretation of the meaning of unwanted compulsive thoughts and that TAF can be both a cause and a consequence (6). In our study, TAF total score was found to be significantly higher in girls. When the studies conducted with adolescents before the pandemic were examined, it was seen that there was no difference between male and female gender (18,19). When we look at the studies conducted during the pandemic, it has been observed that anxiety and depression are more common in female adolescents, especially female adolescents are at higher risk of being exposed to violence during this crisis period, and the pandemic has a more stressful effect on women (20,21). In female adolescents, this stress and psychological impact and TAF may have mutually influenced and increased each other. In our study, it was observed that the TAF-SELF subscale score was significantly higher in patients aged 12 years and older. In the literature, there are few studies on the relationship between cognitive processing and age in OCD patients, and it is stated that investigating age-related differences can shed light on when OCD-related cognitive processing may become evident. In a study, these processes may become more prominent during adolescence, when the severity of OCD may worsen (22). Libby et al. reported that TAF is common among young people aged 11-18 years. Researchers have suggested that this may be related to the emergence of abstract operational thinking, which is characterized by abstract thinking, hypothetical deduction and metacognitions, and includes the ability to empathize, seen at the age of 11 years. They also stated that with the onset of the abstract operational period, adolescents see themselves in the focus of attention of other people and this results in believing that they are the only and unlimited power, and this cognitive ground causes young people to care more about their thoughts (23). In addition, although adolescents can establish the cause-effect relationship to understand the life-saving restrictions to prevent the spread of the pandemic, their incomplete cognitive development can lead to their inability to evaluate risky situations well enough and to perceive the process as much more risky or less risky (24,25). In our study, a significant relationship was found between sexual obsessions and TAFNEG subscale. Considering the sexual and impulsive development process of the adolescent age group, it can be predicted that the youth may experience intense anxiety about controlling their thoughts and actions due to intense feelings of guilt and self-blame, and this may increase TAF for negative events (5). In our study, TAFPOS, TAFHARM and TAFTOTAL subscale scores were found to be significantly higher in patients with religious obsessions. In a study by Kim et al., sexual/religious OCD symptoms were significantly associated with schemas of vulnerability to harm or illness (26). In a study, it was determined that people with excessive moralistic rules and religious beliefs add personal and magical meanings to the content and formation of obsessive intrusive thoughts, that these people give excessive importance to intrusive thoughts, and that more obsessive intrusive thoughts occur as they try to control these thought (27). Another study showed that when compared to non-religious participants, highly religious people believed that writing and thinking about negative events was more morally wrong and increased the likelihood of the event (28). It is suggested that the fusion of thought and action increases the probability of neutralizing behavior because it increases the feelings of responsibility and guilt in the person (29). In a study by Rachman et al., an evaluation was made about the participants' wishing for something bad to happen to someone, and it was observed that the participants with a high score on the TAF scale had more feelings of restlessness, guilt, and responsibility, tried to neutralize this thought, and resorted to various compulsions to achieve this (30). In our study, a significant correlation was found between washing/cleaning compulsions and TAFHARM subscale scores in adolescents. As a result of the increase in the number of cases, number of deaths, hygiene and social distance warnings during the pandemic, the anxiety of adolescents increased and cleaning compulsions to prevent the transmission of COVID-19 may have increased or may have arisen. Similarly, adolescents with intense magical thoughts/superstitions may have high TAFNEG, TAFSELF, TAFHARM, and TAFTOTAL scores due to high sense of responsibility, guilt, and restlessness, and may have applied to compulsions to neutralize their negative feelings.

Study limitations: When we look at the literature in our study, the relatively high sample size, the high reliability of the scales used in the age range of the group, and the use of a semi-structured scale such as CY-BOCS are the strengths of our study. Among the limitations of the study, it is a cross-sectional study, the control group was not included, the diagnoses and comorbid diagnoses were not made through semi-structured interviews such as K-SADS-PL, and comorbid diagnoses were taken from file information.

Conclusion

As a result, examining the effects of the pandemic and the restrictions applied due to the pandemic on OCD symptoms in children and adolescents will be important in the diagnosis and treatment process in this period when the number of cases starts to increase again. The results of our study and the evaluation of the relationship between age, gender and TAF in future studies are thought to contribute to the literature for a developmental explanation of the cognitive theory of OCD.

Ethic Approval: Permission for the study was obtained from Kocaeli University Faculty of Medicine (KUFM) Clinical Research Ethics Committee with the decision numbered GOKAEK-2020/14.03 dated 13/08/2020. Written informed consent was obtained from the participants.

Conflict of Interest: The authors declared no potential conflicts of interest for his study.

Financial Support: The authors received no financial support for this research.

Authorship Contributions: concept: NÇM, İDÇ; design: NÇM, İDÇ; data collection or processing: MDG, ŞNA, SY, AD ; analysis or interpretation: İDÇ, MDG, SY, ŞNA, ; literatüre search: İDÇ, ŞNA, MDG, SY, AD ; writing: İDÇ, MDG, ŞNA, SY, AD

References

1. WHO. Director-General's opening remarks at the media briefing on COVID-19 [Internet]. WHO; 2020 [updated 2020 March 11; cited November 26, 2022], Avaible from: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020.
2. Demir M, Kaya F. Analysis of the relationship between obsessive compulsive disorder and ınterpersonal cognitive distortions through structural equation modeling. Current Perspectives in Social Sciences 2016;57:175-186.
3. Beck A. Bilişsel Danışma Temel İlkeler ve Ötesi. Ankara: Türk Psikologlar Derneği; 2001.
4. Burns DD. Feeling good. New York: Signet Book; 1981. p.
5. Berle D, Starcevic V. Thought–action fusion: Review of the literature and future directions. Clin Psychol Rev 2005;25(3):263-284.
6. Rachman S. A cognitive theory of obsessions. Behav Res Ther 1997;35:793-802.
7. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, et al. The Yale-Brown obsessive compulsive scale: I. Development, use, and reliability. Arch Gen Psychiatry 1989;46(11):1006-1011.
8. Yucelen AG, Rodopman-Arman A, Topcuoglu V, Yazgan MY, Fisek G. Interrater reliability and clinical efficacy of Children's Yale-Brown Obsessive-Compulsive Scale in an outpatient setting. Compr Psychiatry 2006;47(1):48-53.
9. Evans DW, Hersperger C, Capaldi PA. Thought-action fusion in childhood: Measurement, development, and association with anxiety, rituals and other compulsive-like behaviors. Child Psychiatry Hum Dev 2011;42(1):12-23.
10. Tarakcioglu MC, Boysan M, Caliskan Y, Demirel OF, Memik NC, Kadak MT. Psychometric properties of the Turkish version of the Thought-Action Fusion–Child Version (TAFIC). Psychiatry Clin Psychopharmacol 2020;30(1):64-70.
11. Tanir Y, Karayagmurlu A, Kaya I, Kaynar TB, Türkmen G, Dambasan BN, et al. Exacerbation of obsessive compulsive disorder symptoms in children and adolescents during COVID-19 pandemic. Psychiatry Res 2020;293:113363.
12. Schwartz-Lifshitz M, Basel D, Lang C, Hertz-Palmor N, Dekel I, Zohar J, et al. Obsessive compulsive symptoms severity among children and adolescents during COVID-19 first wave in Israel. J Obsessive Compuls Relat Disord 2021;28:100610.
13. Nissen JB, Højgaard DRMA, Thomsen PH. The immediate effect of COVID-19 pandemic on children and adolescents with obsessive compulsive disorder. BMC psychiatry 2020;20(1):1-10.

14. Darvishi E, Golestan S, Demehri F, Jamalnia S. A cross-sectional study on cognitive errors and obsessive-compulsive disorders among young people during the outbreak of coronavirus disease 2019. Act Nerv Super 2020;62(4):137-142.
15. Seçer İ, Ulaş S. An investigation of the effect of COVID-19 on OCD in youth in the context of emotional reactivity, experiential avoidance, depression and anxiety. Int J Ment Health Addict 2021;19(6):2306-2319.
16. Storch EA, Sheu JC, Guzick AG, Schneider SC, Cepeda SL, Rombado BR ,et al. Impact of the COVID-19 pandemic on exposure and response prevention outcomes in adults and youth with obsessive-compulsive disorder. Psychiatry Res 2021;295:113597.
17. Obsessive Compulsive Cognitions Working Group (OCCWG). Cognitive assessment of obsessive-compulsive disorder. Behav Res Ther 1997;35(7):667-681.
18. Muris P, Meesters C, Rassin E, Merckelbach H, Campbell J. Thought–action fusion and anxiety disorders symptoms in normal adolescents. Behav Res Ther 2001;39(7):843-852.
19. Yavuz M, Akdeniz B, Akyol A, Kurt HÇ, Bilgis C, Çolak A, et al. Ergen yaş grubunda aleksitimi ve sürekli kaygı düzeyi ilişkisinde düşünce eylem kaynaşmasının aracı rolünün incelenmesi. J Clin Psy 2020;23(3):326-332.
20. Rodrıguez-Besteıro S, Tornero-Aguılera JF, Fernandez-Lucas J, Clemente-Suarez VJ. Gender differences in the covıd-19 pandemic risk perception, psychology, and behaviors of spanish university students. Int J Environ Res Public Health 2021;18(8):3908.
21. Zhou SJ, Zhang LG, Wang LL, Guo ZC, Wang JQ, Chen JC, et al. Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. Eur Child Adolesc Psychiatry 2020;29(6):749-758.
22. Farrell L, Barrett P. Obsessive□compulsive disorder across developmental trajectory: Cognitive processing of threat in children, adolescents and adults. Br J Psychol 2006;97(1):95-114.
23. Libby S, Reynolds S, Derisley J, Clark S. Cognitive appraisals in young people with obsessive□compulsive disorder. J Child Psychol Psychiatry 2004;45(6):1076-1084.
24. Eccles J. Schools, Academic Motivation, and Stage-Environment Fit. In: Lerner RM, Steinberg L, editors. Handbook of adolescent psychology. 2nd ed. New Jersey: John Wiley & Sons; 2004. p. 125-153.
25. Ghosh R, Dubey MJ, Chatterjee S, Dubey S. Impact of COVID-19 on children: special focus on the psychosocial aspect. Minerva Pediatr 2020;72(3):226-235.
26. Kim JE, Lee SW, Lee SJ. Relationship between early maladaptive schemas and symptom dimensions in patients with obsessive-compulsive disorder. Psychiatry Res 2014;215(1):134-140.
27. Eremsoy CE, Inozu M. The role of magical thinking, religiosity and thought-control strategies in obsessive-compulsive symptoms in a Turkish adult sample. Behaviour Change 2016;33(1):1-14.
28. Berman NC, Abramowitz JS, Pardue CM, Wheaton MG. The relationship between religion and thought–action fusion: Use of an in vivo paradigm. Behav Res Ther 2010;48(7):670-674.
29. Rachman S, Shafran R. Cognitive distortions: Thought–action fusion. Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice 1999;6(2):80-85.
30. Rachman S, Shafran R, Mitchell D, Trant J, Teachman B. How to remain neutral: An experimental analysis of neutralization. Behav Res Ther 1996;34(11-12):889-898.