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ONLINE EDUCATION ATTITUDES, INTERNET USE HABITS, AND WEIGHT GAIN DURING THE COVID-19 PANDEMIC IN CHILDREN AND ADOLESCENTS WITH PSYCHIATRIC DISORDERS

Psikiyatrik Bozukluğu Olan Çocuk ve Ergenlerde COVID-19 Pandemisi Sırasında Çevrim İçi Eğitime Yönelik Tutumlar, İnternet Kullanım Alışkanlıkları ve Kilo Artışı

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ABSTRACT

Objectives: To investigate the online education participation attitudes of children and adolescents with psychiatric disorders during pandemics, their internet using habits, and weight gain status. **Methods:** Internet using habits, weight gain status, anxiety, and depressive symptom severity of participants with attention deficit hyperactivity disorder (ADHD), anxiety, and depressive disorder during the first year of the pandemic are compared with the healthy controls. **Results:** COVID-19 related psychiatric symptoms were significantly more common in the depression and anxiety group. ADHD or depression group had lower attendance to the online classes and made online friends more frequently. Duration of social media use was significantly higher in the anxiety and depressive disorder groups. The weight change ratio of the ADHD group from the beginning of the pandemic was greater than the controls. **Discussion:**During the pandemic period, anxiety or depression groups exhibited more intense psychiatric symptoms. ADHD, or depression, plays a role in their lower participation in classes, putting these groups at an academic disadvantage compared to their typically developing peers.

Keywords: Anxiety Disorder, Attention Deficit Hyperactivity Disorder, Child and Adolescent Psychiatry, Depression, Pandemic

ÖZET

Amaç: Pandemi döneminde psikiyatrik bozukluğu olan çocuk ve ergenlerin çevrim içi eğitime katılım tutumlarını, internet kullanım alışkanlıklarını ve kilo artışı durumlarını araştırmak. **Yöntem:** Pandeminin ilk yılında dikkat eksikliği hiperaktivite bozukluğu (DEHB), anksiyete ve depresyon tanısı olan katılımcıların internet kullanım alışkanlıkları, kilo artışı durumları ile anksiyete ve depresif semptom şiddetleri sağlıklı kontrollerle karşılaştırıldı. **Bulgular:** COVID-19 ile ilişkili psikiyatrik semptomlar, anksiyete ve depresyon grubunda anlamlı düzeyde daha yaygındı. DEHB veya depresyon grubunun çevrim içi derslere katılım oranı daha düşüktü ve çevrim içi arkadaş edinme sıklığı daha yüksekti. Sosyal medya kullanım süresi, anksiyete ve depresyon gruplarında anlamlı olarak daha fazlaydı. Pandeminin başlangıcından itibaren kilo değişim oranı, DEHB grubunda kontrollere göre daha fazlaydı. **Tartışma:** Pandemi süresince, anksiyete veya depresyon tanısı olan bireyler daha yoğun psikiyatrik semptomlar sergilemiştir. DEHB veya depresyon tanısı, çevrim içi derslere düşük katılım ile ilişkili olup, bu durum söz konusu bireylerin akademik açıdan tipik gelişim gösteren akranlarına kıyasla dezavantaj yaşamalarına neden olabilir.

Anahtar Kelimeler: Anksiyete Bozukluğu, Çocuk ve Ergen Psikiyatrisi, Depresyon, Dikkat Eksikliği Hiperaktivite Bozukluğu, Pandemi

METHOD

Participants

The study was conducted after getting ethical approval from the Ethics Committee of Yenimahalle Education and Training Hospital. Attitudes during the online education period, internet use habits, and psychiatric symptom scores associated with the coronavirus pandemic of children with ADHD, anxiety disorders, depressive disorders, and healthy controls are investigated. Data were collected between March 2021 and March 2022, when pandemic-related restrictions were still influencing school routines and daily life. Children and adolescents aged 7-17 years who were diagnosed with ADHD, anxiety disorder, or depressive disorder (the most frequent diagnosis in outpatient child and adolescent psychiatry clinics), who had been diagnosed before the pandemic and referred to an education and research hospital child and adolescent psychiatry outpatient clinic during last three months during the first year of the pandemic, were included in the study. The inclusion criteria were being 7-17 years old, being literal, diagnosed before the pandemic, and referring to the clinic with at least one parent. Children with intellectual disability, autism spectrum disorder, and psychotic disorders are not included in the study. Being illiterate (child or the parent) and being under institutional care were the other exclusion criteria of the study. The healthy children and adolescents who did not meet the diagnostic criteria for any psychiatric disorder constituted the control group. All participants have provided written consent for their data to be used in this research.

Data Collection Tools

All children participating in the study filled out the Child Depression Inventory (CDI) and Screen for Childhood Anxiety and Related Emotional Disorders (SCARED), and their parents filled out the Coronavirus-Related Psychiatric Symptom Scale In Children - Parental Form (CoV-PSY-CP). According to parental reports, the clinician completed the socio-demographic and clinical form and conducted the Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS) assessment.

Socio-demographic and Clinical Form: This form was developed by the researchers. It includes the socio-demographic and clinical characteristics of the children and adolescents and the individual and family COVID-19 pandemic history.

Child Depression Inventory (CDI): The CDI is a self-report scale that was filled by children aged 6-18 and was developed by Kovasc. Turkish validity and reliability study was conducted by Öy et al. (Oy B., 1991). This scale, comprising 27 items, presents three options for each item. Each item is rated 0, 1, or 2 points based on symptom severity. The higher the score, the more severe the depression. The maximum score is 54.

Screen for Childhood Anxiety and Related Emotional Disorders (SCARED): The Turkish validity and reliability study of the scale developed by Birmaher et al. (Birmaher et al., 1997) was performed by Karaceylan Çakmakçı (2004). The scale consists of 41 items, with a score of 25 or higher considered a warning sign for anxiety disorder.
Coronavirus-Related Psychiatric Symptom Scale İn Children - Parental Form (CoV-PSY-CP): The scale was developed by Tural Hesapcioglu et al. (2021) to assess the psychiatric symptoms associated with the COVID-19 pandemic in children and adolescents (Tural Hesapcioglu et al., 2021). The scale has 35 items and a two-factor structure. Each item has four choices. The first factor in the CoV-PSY-CP is the anxiety symptoms subscale, which consists of 12 items. The second factor is the depressive symptoms subscale, which consists of 23 items.

Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS): The semi-structured interview form, developed by Kaufman et al. (1997), aims to identify the past and current psychopathologies of children and adolescents according to DSM-V diagnostic criteria. The Turkish validity and reliability study of the form was conducted by Unal et al. in 2019 (Unal et al., 2019).

Procedure

The children and adolescents with ADHD, anxiety disorder, or depressive disorder, according to K-SADS, who had been diagnosed in the last

three months of 2019 and applied to the child and adolescent psychiatry outpatient clinic in the last three months of 2020 that met the inclusion criteria constitute the study groups. CDI and SCARED are applied to children and adolescents and CoV-PSY-CP is fulfilled by the parents. A socio-demographic and clinical form for each participant is filled out by the clinician, according to the parents' reports. The patients' and their family's coronavirus infection and pandemic history are asked within the socio-demographic and clinical form. Frequent parents talking to their child about coronavirus were asked parents on a 5-Likert-type scale. Never talking about coronavirus with the child, talking one or two days of the month and one or two days of the week were assessed as rare talking. Talking about coronavirus with the child more than 3 days a week was assessed as frequent talking.

Participants' weight change status: Participants' weights before and during the pandemic were obtained from hospital records. Patients without previous weight records were excluded from the study. The percentage of the child's body weight change during the pandemic was calculated. An unintended weight gain of 7% or more was interpreted as gaining weight during the pandemic.

Statistical Analysis

The quantitative data of the groups were summarized as mean ± standard deviation if the data were parametric. Median and interquartile range (IQR) were used to summarize the non-parametric quantitative data. Categorical data were summarized as numbers and percentages. The parametric data of the groups were compared with one-way ANOVA. Tukey-HSD test was used for post-hoc multiple comparisons. The non-parametric quantitative data of the groups were compared with the Kruskal-Wallis Test. The Dunn test was used for multiple comparisons. Categorical data were compared with the Chi-Square Test. The significance value was set at 0.05.

RESULTS

In total, 64 ADHD, 62 anxiety disorder, 39 depressive disorder diagnosed children and adolescents, and 45 healthy controls were included in the study. The socio-demographic characteristics of the study and the control groups are presented in Table 1.

Table 1. Sociodemographic characteristics of the groups

	ADHD (n=64)	Anxiety Disorders (n=62)	Depression (n=39)	Control (n=45)	F or χ^2	*p*
Age (Mean ± SD)	11.82±2.52[a]	13.08±2.76[b]	14.05±2.21[b]	12.97±3.05[ab]	5.961	**0.001**
Sex (Female, n (%))	27 (42.2%)[a]	45 (72.6%)[bc]	33 (84.6%)[bc]	26 (57.8)[ab]	22.492*	**<0.001**
Number of Siblings (Median (IQR))	2 (1)	2 (1)	2 (2)	2 (1)	2.510**	0.542
Birth Order (Median (IQR))	1 (1)	1 (1)	1 (2)	1 (1)	2.027**	0.567
Living with mom and dad (n (%))	55 (85.9%)	56 (90.3%)	33 (84.6%)	35 (77.8%)	6.695	0.350
Low-income (n (%))	13 (20.3%)	11 (17.7%)	7 (17.9%)	10 (22.2%)	3.114	0.794

ADHD: Attention deficit hyperactivity disorder, *Pearson Chi-Square, **: Kruskal-Wallis Test, a, b, c: The same upper letters in the rows indicate non-difference in post-hoc analysis. Different upper letters indicate the significant difference. $p<0.05$ indicates statistical significance.

There was no significant age difference between the groups and the control group, except for the ADHD group, which was significantly younger than the other two psychiatric disorder groups. There was no significant difference in the number of siblings, birth order, living with mom and dad, and socioeconomic status of the groups. Males were more common in the ADHD group than the other two psychiatric diagnosed groups.

There was no significant difference between the cases and their family's coronavirus infection and pandemic history. The patients' and their family's coronavirus infection and pandemic history are presented in Table 2.

Table 2. The patient's and his/her family's coronavirus infection and pandemic history

	ADHD (n=64)	Anxiety Disorders (n=62)	Depression (n=39)	Control (n=45)	χ^2	*p*
Did the child infect with the COVID-19? Yes (n (%))	6 (9.4%)	4 (6.5%)	8 (20.5%)	5 (11.1%)	4.656	0.199
Did any family member infect with the COVID-19? (n (%))	28 (43.8%)	25 (40.3%)	19 (48.7%)	23 (51.1%)	1.479	0.687
Is the family quarantined? (n (%))	20 (31.3%)	13 (21.0%)	11 (28.2%)	13 (28.9%)	1.833	0.608
Have any of his/her relatives died due to COVID-19? (n (%))	3 (4.7%)	4 (6.5%)	3 (7.7%)	6 (13.3%)	2.758	0.430
Have any of his/her relatives hospitalized due to COVID-19? (n (%))	13 (20.3%)	10 (16.1%)	7 (17.9%)	12 (26.7%)	1.937	0.586
Attendance to school during pandemic (n (%))	36 (56.3%)	38 (61.3%)	19 (48.7%)	29 (64.4%)	2.503	0.475
Frequent parent talking to the child about coronavirus (n (%))	19 (29.7%)	16 (25.8%)	17 (43.6%)	18(40.0%)	4.710	0.193
Frequent staying alone in home during the pandemic	9 (14.1%)	5 (8.1%)	4 (10.3%)	11 (24.4%)	6.412	0.093
Parents work remotely at home during the pandemic	17 (26.6%)	17 (27.4%)	10 (25.6%)	11 (24.4%)	0.130	0.988
Losing job in the pandemic	5 (7.8%)	8 (12.9%)	4 (10.3%)	5 (11.1%)	0.913	0.822

ADHD: Attention deficit hyperactivity disorder, $p<0.05$ indicates statistical significance.

The online class attendance rate was different between groups. The attendance rate of the children and adolescents with ADHD was lower than the control group. The depression group also had a lower online class attendance rate than the control group. The comparison of the internet habits and the characteristics of the groups are presented in Table 3. Weekday internet use during the pandemic (hour/day) was significantly higher in the anxiety and depression groups than in the control group. Weekend internet use during the pandemic (hour/day) was significantly higher in depression groups than in the control group. Internet time for the online chat was significantly longer in the depression group than in the ADHD group. The duration of social media use was significantly higher in the anxiety disorder and depressive disorder-diagnosed groups compared to the control group. The depression-diagnosed group was using social media longer than the ADHD and anxiety disorder groups. The children with ADHD or depression were making online friends more frequently than the control group. The weight gain ratio was higher in the ADHD group during pandemics than in the control group (Table 3).

Table 3. Internet using habits and weight gain status of the study and control groups

	ADHD (n=64)	Anxiety Disorders (n=62)	Depression (n=39)	Control (n=45)	*p*
Online lesson hours to be entered per day (Median (IQR))	5.50 (1)	5 (2.25)	6 (2)	5 (1)	0.076
Attended online lesson time (Median (IQR))	4 (3.625)	5 (3)	5 (5)	5 (2)	0.124
Online class attendance rate (Median(IQR))	100 (50)^{a}	100 (42.5)^{ab}	71 (80)^{a}	100 (0)^{b}	**0.002**
Weekday internet use during pandemic (hour/day) (Median (IQR))	5 (6)^{ab}	5 (5.24)^{a}	6 (7)^{a}	3 (4)^{b}	**0.002**
Weekend internet use during pandemic (hour/day) (Median (IQR))	6 (6)^{ab}	6 (6)^{ab}	7 (6)^{a}	4 (3.50)^{b}	**0.010**

Table 3 continued.

Video games playing hours per day (Median (IQR))	2 (2.75)	2 (3.125)	1 (3)	1 (1)	0.263
Watching videos (hour/day) (Median (IQR))	2 (2)	1 (1)	1 (2)	1 (1)	0.064
Chat (hour/day) (Median (IQR))	0.25 (1)[a]	1 (1)[ab]	1 (2)[b]	1 (1)[ab]	**0.036**
Using social media (Median (IQR))	0 (1.75)[a]	1 (1.25)[ab]	1 (2) [b]	0 (1) [a]	**<0.001**
Making friends online during the pandemic (n, %)	23 (35.9%)[a]	16 (25.8%)[ab]	18 (46.2%)[ac]	8 (17.8%)[b]	**0.025**
Meeting friends weekly face to face (n, %)	24 (37.5%)	23 (37.1%)	13 (33.3%)	16 (35.6%)	0.975
Three or more daily physical exercise (n, %)	9 (14.1%)	5 (8.1%)	5 (12.8%)	11(24.4%)	0.121
Getting on weight during pandemic (n, %)	39(60.9%)[a]	24 (39.7%)[b]	17 (43.6%)[ab]	17(38.8%)[b]	**0.039**
Weight Gain of 7% or More (n, %)	35(41.7%)[a]	22(26.2%) [ab]	14(16.7%) [ab]	13(15.5%)[b]	**0.031**
How afraid of having coronavirus infection (Median (IQR))	5 (4)	5 (3.25)	5 (5)	6 (4)	0.824
Caring about the use of masks (Median (IQR))	10 (0)	10 (0)	10 (0)	10 (0)	0.384
Caring about the social distance (Median (IQR))	10 (0.75)	10 (2)	10 (2)	10 (1.5)	0.270

ADHD: Attention deficit hyperactivity disorder, IQR: Interquartile range, a, b, c, d: The same upper letters in the rows indicate non-difference. Different upper letters in the rows indicate the significant difference. $p<0.05$ indicates statistical significance.

The CDI, SCARED, CoV-PSY-CP Anxiety Symptoms Subscale, CoV-PSY-CP Depressive Symptoms Subscale, and CoV-PSY-CP Total Scores of the groups are compared. The scale scores significantly differed between groups (Table 4).

Table 4. CDI, SCARED, and CoV-PSY-CP scores comparisons of the groups

	ADHD (n=64)	Anxiety Disorders (n=62)	Depression (n=39)	Control (n=45)	*p*
CDI (Median(IQR))	11 (13)[a]	18 (12.75)[a]	30 (19)[b]	7 (5)[c]	**<0.001**
SCARED (Median(IQR))	23 (17.25)[a]	39 (16.50)[b]	43 (25)[b]	11 (8.50) [c]	**<0.001**
CoV-PSY-CP Anxiety Symptoms Subscale (Median (IQR))	19 (10)[a]	22 (12)[b]	24 (14)[b]	18 (9)[ab]	**0.003**
CoV-PSY-CP Depressive Symptoms Subscale (Median (IQR))	37.50 (17.50)[ab]	36.50 (19.50)[a]	46 (20)[a]	29 (9.50)[b]	**<0.001**
CoV-PSY-CP Total Score (Median (IQR))	57 (24.50) [ab]	60.50 (28.75) [a]	70 (30)[a]	47 (14.50)[b]	**<0.001**

ADHD: Attention deficit hyperactivity disorder, IQR: Interquartile range, CDI: Child Depression Inventory, CoV-PSY-CP: Coronavirus-Related Psychiatric Symptom Scale İn Children - Parental Form, SCARED: Screen for Childhood Anxiety and Related Emotional Disorders. $p<0.05$ indicates statistical significance.

CDI and SCARED scores of all three psychiatric diagnosis groups were higher than the control group. The CDI scores of the anxiety and depression group were higher than the ADHD group, and the CDI score of tyhe depression group was higher than the anxiety group. The SCARED scores of the anxiety and depression groups were also higher than those of the ADHD group. However, there was no significant difference between these two regarding SCARED. The anxiety and depression groups' CoV-PSY-CP Anxiety Symptoms Subscale score was significantly higher than the ADHD group. Compared with the control group, although they did not reach statistical significance, they were close to significance. In terms of the CoV-PSY-CP Depressive Symptoms Subscale and CoV-PSY-CP Total Score, the anxiety group and depression group had statistically significantly higher scores than the control group.

DISCUSSION

Online education participation attitudes, internet use habits during pandemics, weight gain status, and coronavirus pandemic-related psychiatric symptoms of children and adolescents with psychiatric diagnoses are investigated in this study. The first finding of this study is that the ADHD and depression groups had lower online class attendance rates than

the control group. Children diagnosed with ADHD were found to have a higher incidence of unauthorized absences and a greater likelihood of experiencing school exclusion during their formal education, as reported in the literature (Fleming et al., 2017). Online education does not detach the child from his/her home life, cannot control the distracting activities in the environment, and results in relatively little control of the teacher. The finding of this study shows that ADHD children's online education attendance is low. The depression group also had a lower online class attendance rate than the control group. There was a rapid transition to online education with the onset of the pandemic. The existing disorders of the youth with ADHD or depression play a role in their lower participation in classes, putting these groups at an academic disadvantage compared to their typically developing peers. The second finding of this study is about the internet using characteristics. Non-educational internet use during the pandemic (hour/day) was significantly higher in anxiety and depression groups than in the control group on weekdays. On weekends, the depression group was using the internet more than the control group. Social media use during the pandemic (hour/day) was significantly higher in depression groups than in the control group, and online chat was higher in depressive groups than in the ADHD groups. Some studies have suggested that social media platforms serve as a valuable means for the general public to sustain connections with friends and family, thereby mitigating feelings of isolation, especially during the COVID-19 pandemic (Brooks et al., 2020). It is expected that internet usage will increase in general, as the rates of outdoor activities decreased during the pandemic. The former studies reported longer internet use time and higher internet addiction in depressed children and adolescents and indicated a potential rise in social media usage with declines in real-life satisfaction (Kross et al., 2013; Lin et al., 2016). A study conducted with Scottish adolescents stated that excessive use of social media led to depression and anxiety, especially by impairing sleep quality (Woods & Scott, 2016). Staying at home, which becomes more evident during the pandemic, may be related to the increase in social media use in depressive disorder. Fulfilling the responsibilities may help to decrease anxiety and stress. Excessive social media use may have contributed to the increase in depressive and anxiety symptoms by negatively affecting the feeling of "time wasted" and influencing mood (Lin et al., 2016; Sagioglou & Greitemeyer, 2014). Another examined internet using characteristic in this study is making online friends. In this study, the children with ADHD or depression were making online friends more frequently than the control group. Friendship challenges are common in ADHD (Powell et al., 2021). Comparisons between children diagnosed with ADHD and typically developing controls across various studies consistently reveal that those with ADHD are inclined to have fewer enduring and lower-quality friendships (Blachman & Hinshaw, 2002; Marton et al., 2015). The increased online socialization of adolescents spending more time on the internet during the pandemic period may be associated with an escalation of depressive symptoms and feelings of loneliness in children and adolescents diagnosed with ADHD and Depression (Huang, 2022). This study's third main finding is about the groups' weight gain ratios. The general population experienced mandates throughout the pandemics, including social isolation, semi-lockdowns, and instructions to adhere to "stay at home" orders. Rundle et al. proposed that the COVID-19 pandemic has exacerbated risk factors for obesity in children (Rundle et al., 2020). During the COVID-19 pandemic, extended periods of home confinement, school closures, and disruptions to daily routines led to significant behavioral changes in children and adolescents. Zachary et al. found that weight gain during self-quarantine in adults was strongly associated with increased eating in response to external cues (such as the sight and smell of food), emotional triggers (especially stress and boredom), snacking after dinner, and reduced physical activity and sleep duration (Zachary et al., 2020). Although conducted in adults, these findings provide insight into the mechanisms that likely affected children and adolescents similarly. Our study supports and extends these observations by demonstrating that children with ADHD were particularly vulnerable to weight gain during the pandemic. Specifically, the ADHD group showed significantly greater weight increases compared to other psychiatric groups and

controls. This may be due to the unique neurobehavioral profile of individuals with ADHD, who tend to exhibit heightened impulsivity and reduced self-regulation in response to external and emotional stimuli. Cortese conducted a comprehensive review of the association between ADHD and obesity, identifying multiple mechanisms—such as binge eating, food cravings, emotional overeating, and poor dietary restraint—that are disproportionately observed in individuals with ADHD (Cortese, 2019). He emphasized that these behaviors may be linked to deficits in hot executive functions, including impulsivity and altered reward processing. Furthermore, children with ADHD often show a disrupted balance between internal satiety cues and external eating triggers, predisposing them to overeating in unstructured environments—such as those experienced during pandemic-related lockdowns. The combination of ADHD-related eating vulnerabilities and the obesogenic environment described by Zachary et al. may explain the significantly elevated weight gain in our ADHD group. This suggests that children with ADHD represent a high-risk group for unhealthy weight gain during times of societal disruption, and tailored preventive strategies may be needed for this population (Cortese, 2019; Hanć & Cortese, 2018). In ADHD children, impulsivity stands out more prominently than in other psychological disorders, which have been associated with binge eating (Whiteside et al., 2007). Consequently, substantial weight gain in children with ADHD during the pandemic may stem not only from overeating but also from reduced levels of physical activity and the adoption of sedentary lifestyles. The fourth finding of this study is that CDI and SCARED scores of all three psychiatric diagnosis groups were higher than the control group during the COVID-19 pandemic. The psychological well-being of adolescents during the COVID-19 pandemic may be impacted by various factors, including stressful life events, prolonged home confinement, intrafamilial violence, excessive use of the internet, and engagement with social media (Guessoum et al., 2020). The confinement to home, apprehension about infection, and its repercussions may heighten psychiatric symptoms in individuals with psychiatric disorders (Chevance et al., 2020; Guessoum et al., 2020). In our study, the youth with previously diagnosed psychiatric disorders had worse psychiatric symptoms during the pandemic. Previous psychiatric disorders may have the potential to lower the coping abilities in stressful situations such as the pandemic process in children. The fifth finding of this study is that the anxiety and depression groups' CoV-PSY-CP Anxiety Symptoms Subscale score was significantly higher than the ADHD group. The diagnostic criterion for children with ADHD is avoidance of responsibility (APA 2013). During the period when schools are closed, escaping from school and course responsibilities may have provided temporary well-being in children. According to Bobo et al., children with ADHD exhibited improvements, which were associated with diminished school-related stress and the implementation of adaptable schedules that honored the natural rhythms of the children (Bobo et al., 2020). In terms of the CoV-PSY-CP Depressive Symptoms Subscale and CoV-PSY-CP Total Score, the anxiety group and depression group had statistically significantly higher scores than the control group. Due to all the questions asking if the child experienced the symptoms from the beginning of encountering the pandemic in CoV-PSY-CP, it seems that children and adolescents with depressive disorder or anxiety disorders are more prone to experience pandemic-related anxiety and depressive symptoms. In conclusion, the COVID-19 pandemic had a disproportionately negative impact on children and adolescents with psychiatric disorders. Reduced participation in online education, increased social media use among depressive youth, and significant weight gain in the ADHD group point to a pattern of vulnerability across behavioral, emotional, and physical domains. These findings emphasize the importance of developing preventive strategies tailored to the needs of this high-risk population in future crises. This study has some limitations and strengths. The first limitation is that the study is conducted on children and adolescents with depression, anxiety, or ADHD. It did not include the other psychiatric disorders. However, these three disorders are some of the most frequent psychopathologies in children and adolescents. Second, the study did not have a longitudinal design. The study is executed in a clinical population. This

is one of the strengths of this study because most of the studies about the psychological effects of the COVID-19 pandemic on children and adolescents are conducted with population or school-based samples. Investigating different diagnosed groups is the second strength. The examination of the way of non-curricular internet use characteristics also helped us to understand how the children and adolescents with different psychiatric diagnoses have used the internet, unlike the control group. The exclusion of participants lacking pre-pandemic weight records may have introduced sampling bias, potentially underrepresenting individuals from lower socioeconomic backgrounds or with limited access to healthcare services. Consequently, the weight-related findings are likely more representative of children and adolescents whose health parameters were systematically monitored, thereby limiting the generalizability of the results. Furthermore, the reliance on parent-reported data introduces a risk of measurement bias, particularly concerning behaviors such as internet usage, emotional symptoms, and weight fluctuations. Finally, the cross-sectional design precludes causal inferences, making it difficult to determine whether increased internet use contributed to weight gain or if both outcomes stemmed from pre-existing psychiatric conditions.

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