

CHANGING TRENDS OF DIAGNOSES IN A CHILD AND ADOLESCENT PSYCHIATRY OUTPATIENT CLINIC BEFORE AND DURING COVID-19: AN ANALYSIS OF REGISTERED DATA

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received: 8.7.2021;

revised: 20.6.2022;

accepted: 17.8.2022

SUMMARY

Background: Investigating the outpatient clinic admissions of children and adolescents significantly affected by the pandemic is crucial in developing policy and intervention methods in the future. The aim of this study is to analyze the admissions of child and adolescent psychiatry outpatient clinics, during the first year since the imposed rearrangements of the COVID-19 pandemic, compared to the one year before.

Subjects and methods: This study was conducted between March 2019 and March 2021 and the total number of 5833 patients referred to the hospital was 3168 in the pre-pandemic period (Pre-P) and 2665 in the pandemic (In-P) period. After excluding 78 not fulfilling inclusion criteria, these screened cases were randomized for 700 patients for Pre-P and 700 for In-P within each group.

Results: Externalization Disorders and Neurodevelopmental Disorders were the most represented diagnoses categories between the two time periods and showed a statistically significant decrease in admission during the pandemic ($p=0.002$, $p=0.024$, respectively). Internalization disorders and the undiagnosed group showed a statistically significant increase during the pandemic ($p=0.024$, $p<0.001$, respectively). Significant differences were also shown in the treatment plan (need for pharmacological and psychotherapy) has increased.

Conclusions: This study stands out by providing data on the trend of diagnosis in a child and adolescent psychiatry outpatient clinic before and during the pandemic period. To dominate these trends would be important to provide a basis for policymakers to plan appropriate management methods and levels of support for children and adolescents with different mental disorders.

Key words: COVID-19 - mental health - psychiatric diagnoses - diagnostic trends

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INTRODUCTION

COVID-19 has rapidly spread worldwide since the end of January 2020, being declared by the World Health Organization (2020) a Public Health Emergency of International Concern, and all countries reacted with a series of measures in varying degrees. As stated in the data published and daily updated by the Turkish Ministry of Health; The first COVID-19 case in Turkey was detected on March 11, 2020, and as of June 14, 2021, the total number of cases from COVID-19, 5.336.073; The total number of deaths was reported as 48.795 (Republic of Turkey Ministry of Health COVID-19 Information Page 2021).

Children and adolescents are a vulnerable group, and they are experiencing a time of difficult transition (Guessoum et al. 2020, Larsen & Luna 2018). Restructuring and rearrangements due to the COVID-19 outbreak may have multiple consequences on the lives of children and adolescents: distress, worry for their parents, unexpected bereavements, closure of schools (John Joseph et al. 2020), and home confinement in many countries (Asmundson & Taylor 2020, Brooks et al. 2020). Moreover, for children and adolescents with psychiatric disorders, lockdown may result in a sudden break or shift in care (Guessoum et al. 2020, Li et al. 2020). This period

causes psychological, economic, and sociological difficulties on children and their families. Because interruptions in both their current academic and social life may have more negative effects on children, who are in developmental age, compared to adults (Gul & Demirci 2021, Newlove-Delgado et al. 2021).

Considering all these rearrangements and risks, increasing demand for mental health care is inevitable (Lazzari et al. 2020, Sinanović et al. 2020), but it is important to know which symptom or diagnosis this demand focuses on. In other words, it is important to be informed about which diagnoses are more motivated to seek help in such a period, which would be important to provide a basis for policymakers to plan appropriate management methods and levels of support for children and adolescents with different mental disorders. In this context, there were studies conducting about the effect of the outbreak on diagnostic distribution in terms of child and adolescent psychiatry inpatient service (Ugueto & Zeni 2021), psychiatric emergency admission (Gómez-Ramiro et al. 2021), or over 18 years outpatient clinic referrals (Seo et al. 2021). To our knowledge, there has been no study regarding the impact of the COVID-19 pandemic on the patients' use of child and adolescent psychiatry outpatient services by diagnosis. Hence, in our study, we

aim to analyze the use of child and adolescent psychiatry outpatient clinic of the hospital, during the first year since the imposed rearrangements of the COVID-19 pandemic in Turkey, compared to the one year before.

SUBJECTS AND METHODS

Study design and population

This study is a retrospective analysis of the data collected from the Child and Adolescent Psychiatry Outpatient Clinic of the Ali Kemal Belviranlı Maternity and Children Hospital of Konya, which is belonging to one of the biggest metropolitan areas of Turkey. The hospital attends a catchment area of 2.100.000 inhabitants.

Data were retrospectively collected from electronic medical records of all patients admitted to the outpatient clinic of the hospital from March 11th, 2019, to March 11th, 2021. Records of individuals aged below 18 years old were included. Records with invalid or missing values for age, sex, treatment plan, primary diagnosis, were excluded. Data screening and extraction were made by the child and adolescent psychiatrists in terms of socio-demographic characteristics (age and gender), primary diagnosis and treatment plan (primary pharmacotherapy, psychotherapy and other). After the diagnoses were extracted, classification was made based on both the DSM-5 diagnostic codes and were classified as internalizing disorders and externalizing disorders. The treatment plan, which was divided into three, is basically determined as follows: Primary Pharmacotherapy (medication + unstructured psychiatric interview), psychotherapy (structured cognitive and behavioral approach, positive parenting recommendations), and other (basic counseling or not any recommendation).

Psychiatric referrals received a diagnosis according to the 5th revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V). The study was carried out in accordance with the Declaration of Helsinki (1989) and was approved by the Turkish Ministry of Health scientific research committee for COVID-19 research and local ethical committee (2021/3316:(6203)).

Time periods

Data were compared among two different time windows:

- March 11th, 2019, to March 11th, 2020, corresponding to a time period of one year before the state of alarm declaration due to the first COVID-19 case in Turkey (pre-period, Pre-P).
- from March 11th, 2020, to March 11th, 2021, corresponding to a time period of one year during lockdown due to the COVID-19 outbreak in Turkey (in-period, In-P).

Statistical Analyses

The Kolmogorov-Smirnov test was used to assess whether continuous variables displayed a normal distribu-

tion. Continuous variables were reported as mean (standard deviation), while categorical variables were reported as percentages. Categorical and continuous variables were analyzed and compared between Pre-P and In-P. Pearson Chi-square, and Fisher's exact test in contingency tables (χ^2), were used to analyze categorical data. Statistical analyses were performed using the Jamovi project (2020; Jamovi, Version 1.2.27 [Computer Software], retrieved from <https://www.jamovi.org>). The level of significance was set at $p \leq 0.05$ (two-tailed).

RESULTS

The total number of patients (5833) referred to the hospital was 3168 for Pre-P and 2665 for In-P. After excluding 78 not fulfilling inclusion criteria, these screened cases were randomized for 700 patients for Pre-P and 700 for In-P within each group.

No differences in age and sex trends between the two study periods were found. Externalization Disorders and Neurodevelopmental Disorders were the most represented diagnoses categories both at Pre-P (N=452; 64.6%, N=468; 66.9%), and In-P (N=411; 58.7%, N=412; 58.9%), and showed a statistically significant decrease in admission at In-P ($p=0.002$, $p=0.024$, respectively). Internalization disorders and the undiagnosed group showed a statistically significant increase between Pre-P and In-P ($p=0.024$, $p<0.001$, respectively). A statistically significant increase in admission rates at In-P in patients with a diagnosis of autism spectrum disorders ($p=0.013$), and trauma and stressor-related disorders ($p=0.019$), was registered. A statistically significant decrease in admission rates at In-P in patients with a diagnosis of communication disorders ($p<0.001$), and disruptive, impulse-control, and conduct disorders ($p<0.004$), was registered. Significant differences were also shown in the treatment plan ($p=0.026$) (Table 1). While pharmacotherapy and structured psychotherapeutic approaches have increased, counseling and other approaches have decreased.

DISCUSSION

To our knowledge, this cross-sectional study is the first provided data of significant clusters of psychiatric diagnoses of children and adolescents in the outpatient clinic before and during COVID-19. The most obvious finding to emerge from the analysis is that during the pandemic, a significant increase was observed in internalizing disorders, in the undiagnosed group, in ASD with relatively severe social deficits, and in trauma and stressor-related disorders, while a significant decrease was observed in externalizing disorders, in neurodevelopmental diseases. Moreover, the need for medication and structured psychotherapy significantly increased other than other management approaches.

The current condition affects children and adolescents in an exceptional way. Schools have been closed, social interactions strongly limited (Kaya et al. 2021),

Table 1. Descriptive statistics and comparison of a child and adolescent psychiatry outpatient clinic during the one year before the pandemic (Pre-P) and the one year during the pandemic (In-P) due to the COVID-19 in Turkey

	Pre-P	In-P	χ^2 -Test	P value
Age at admission (<i>mean ± SD</i>)	10.56±3.95	10.83±3.93		0.220
Gender (<i>N; %</i>)				
Male	450 (64.3%)	426 (60.9%)		0.185
Female	250 (35.7%)	274 (39.1%)		
DSM-V Diagnostic Categories (<i>N; %</i>)				
Neurodevelopmental Disorders	468 (66.9%)	412 (58.9%)	9.594	0.002
ADHD	400 (57.1%)	367 (52.4%)		0.076
ASD	6 (0.9%)	18 (2.6%)	6.105	0.013
Motor Disorders	5 (0.7%)	8 (1.1%)		0.403
SLD	43 (6.1%)	36 (5.1%)		0.417
Communication Disorders	44 (6.3%)	13 (1.9%)	17.505	<0.001
Intellectual Disabilities	29 (4.1%)	28 (4.0%)		0.892
Depressive Disorders	22 (3.1%)	29 (4.1%)		0.318
Anxiety Disorders	91 (13.0%)	102 (14.6%)		0.394
Trauma and Stressor-Related Disorders	1 (0.1%)	8 (1.1%)	5.480	0.019
Obsessive-Compulsive and Related Disorders	27 (3.9%)	31 (4.4%)		0.592
Dissociative Disorders	0 (0.0%)	2 (0.3%)		0.157
Somatic Symptom and Related Disorders	1 (0.1%)	2 (0.3%)		0.563
Feeding and Eating Disorders	0 (0.0%)	1 (0.1%)		0.317
Elimination Disorders	7 (1.0%)	9 (1.3%)		0.615
Disruptive, Impulse-Control, and Conduct Disorders	150 (21.4%)	108 (15.4%)	8.382	0.004
Parasomnias	1 (0.1%)	0 (0.0%)		0.317
Schizophrenia Spectrum and Other Psychotic Disorders	1 (0.1%)	0 (0.0%)		0.317
Other Diagnostic Categories (<i>N; %</i>)				
Internalizing Disorders	137 (19.6%)	172 (24.6%)	5.087	0.024
Externalizing Disorders	452 (64.6%)	411 (58.7%)	5.078	0.024
Undiagnosed Group (<i>N; %</i>)	45 (6.4%)	84 (12.0%)	12.987	<0.001
Treatment Plan (<i>N; %</i>)				
Primary Pharmacotherapy	420 (60.0%)	506 (72.3%)		
Psychotherapy	30 (4.3%)	56 (8.0%)	48.177	0.026
Other	250 (35.7%)	138 (19.7%)		

ADHD: Attention-Deficit/Hyperactivity Disorder; ASD: Autism Spectrum Disorder; SLD: Specific Learning Disorder; Pre-P: Time period from 11/03/2019 to 11/03/2020, corresponding to the one year before confinement due to COVID-19 outbreak in Turkey; In-P: Time period from 11/03/2020 to 11/03/2021, corresponding the one year of confinement due to COVID-19 outbreak in Turkey; SD: Standard Deviation; χ^2 -Test: Chi-squared test; P-value: level of significance

and out-of-home leisure time activities canceled. Reviews have already documented the challenges and burden among the children and adolescents in the midst of COVID-19 stay-at-home orders (Deolmi & Pisani 2020, Fegert et al. 2020). The current crisis imposes multifaceted burdens on children. Considering all these risks, this increasing trend towards primary pharmacotherapy and psychotherapies seen in our study's treatment plan supports those children and adolescents may need a more intensive approach. Because intensive and appropriate intervention methods for the needs of children and adolescents contributed to a significant decrease in negative emotions experienced during the epidemic and an increase in positive emotions (Chen et al. 2021, Zhang et al. 2021). However, one interesting finding is the increase in the undiagnosed group during this period. When symptom-specific rather than disorders were assessed during the pandemic period, it was shown in studies that the need for parenting skills due to restrictions (increased screen-time, reduced physical activity, sleep problems)

(Francisco et al. 2020) and counseling in explaining the pandemic to children increased (Bartlett et al. 2020). Because children may ask direct questions about what is happening now or what will happen in the future about the pandemic and/ related conditions (Bartlett et al. 2020). We think that this group, which has not yet been diagnosed in our studies, is in this category. Likewise, in a nation-wide telepsychiatry study conducted in our country, it was documented that the most common reason for families to apply to child mental health professionals was to counseling on telling children about the pandemic/ parenting support (Dursun et al. 2021).

Several reports have shown that both children and adults exposed to disasters may experience a range of mental health problems (Anjum et al. 2020, Furr et al. 2010, Pfefferbaum et al. 2015) especially internalizing and externalizing problems which are found to be prevalent in disaster-exposed children (Felix et al. 2011, Lai et al. 2013, Lowe et al. 2013, Scaramella et al. 2008). However, studies on the needs of these two populations

regarding how they seek help are relatively insufficient. The interest in telepsychiatry approaches especially by parents with externalizing disorders in the pandemic period may explain the increase in internalizing disorders and the decrease in face-to-face referral in externalizing disorders. In a nationwide telepsychiatry study for children with special needs, higher rates of applications from families of children with externalization disorders support our findings (Dursun et al. 2020). In addition, although there is an increase in both internalizing and externalizing disorders in disasters, there are studies showing that current restrictions and COVID-specific conditions are more likely to increase in disorders such as internalizing (anxiety, depression, and post-traumatic) symptoms in children than in other disorders (de Miranda et al. 2020, Duan et al. 2020). Lastly, despite the decrease in neurodevelopmental disorders, the increase in ASD can also be explained by the closure of special education classrooms/ rehabilitation centers (Petretto et al. 2020, Yazcayir & Gurgur 2021) and the fact that children with ASD are more sensitive to routine changes (Alhuzimi 2021, Eshraghi et al. 2020). Also, the high burden of children with ASD both on themselves and on their caregivers may have caused an increase in their applications in the outbreak (Cassidy et al. 2020, Turan et al. 2020). Neurodevelopmental disorders such as ADHD, in which most of the problems are handled with medication, may not have applied to the healthcare centers by continuing their medications during the pandemic period. Although this seems to be a relative decrease in neurodevelopmental disorders, it supports the increase in ASD applications.

This study has limitations. Data are not nationally representative, and results may not generalize to all outpatient clinics in Turkey. In addition, not all applications were examined, as the samples were determined randomly and the same number for the groups. However, in order not to make a significance, analysis was done on percentages, and also there is no study yet in this sample and this time frame. Data available is limited to out-patient numbers, with no supporting clinical or demographic information to allow an examination of any differential increases imposed by COVID-19 or the restrictions by clinical type or sociodemographic factors. Further studies, which take these variables into account, will need to be undertaken.

CONCLUSIONS

This study stands out by providing data on the trend of diagnosis to a child and adolescent psychiatry outpatient clinic before and during the pandemic period. In this difficult period, although there are many approaches for patients such as face to face or telehealth, to dominate these trends would be important to provide a basis for policymakers to plan appropriate management methods and levels of support for children and adolescents with different mental disorders.

Acknowledgements: None.

Conflict of interest: None to declare.

Contribution of individual authors:

Bahadır Turan: study conception and design, analysis, writing the first draft.

Mehmet Akif Akıncı: study conception and design, material preparation, data collection, review and editing.

All authors approved the final manuscript.

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