

The effect of Sars-CoV2 pandemic on consultations of a child and adolescent emergency psychiatry clinic

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SUMMARY

Objectives: Our study aims to investigate how the pandemic has affected the emergency department (ED) visits and to assess whether COVID-19 pandemic changed the presentations of diagnoses /chief complaints of the patients across three years.

Method: This is a retrospective study. The study population was described as all patients who applied to our Pediatric Psychiatry ED from March to May of 2019, 2020 and 2021.

Results: The overall number of child and adolescent psychiatric emergency department visits declined by 49.5% in 2020 during pandemic period with implementation of COVID-19 related measures. From the corresponding period of 2021, the total number of ED visits have increased to a higher level than the same period of 2020 and even 2019. In 2020 and 2021, compared to 2019 (26.1%); there was a decrease of patients being admitted to the inpatient unit. We also found that the ratio of patients who were diagnosed with autism spectrum, mental retardation, depression, trauma and related, anxiety and obsessive-compulsive disorders got increased.

Conclusion: The immediate drop in visits to ED after the first pandemic restrictions may reflect people being more hesitant to hospitals at the beginning. But one year later, in the mid-pandemic period, the rise in visits to ED could have been because people got used to the pandemic or the need for acute psychiatric care cannot further be postponed. The decrease of admissions to the inpatient psychiatric unit may be a result of COVID-19 related measures as total number of beds got reduced due to restrictions.

Keywords: Child and adolescent psychiatry, COVID-19, emergency psychiatry, pandemic

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic and the restrictions associated with the pandemic are likely to have had a negative effect on the children and adolescents' mental health. Factors like school suspension, social isolation, not being able to access to social support such as friends and other activities, fear of contamination, economic problems and family distress may all cause long-term negative effects on children and adolescents.

Early reports of the pandemic reported that the COVID-19 outbreak caused an increased level of anxiety and depression in child and adolescent population (1, 2, 3). Besides stress factors, a deficit of psychiatric care during the pandemic was also considered a risk factor for increased mental health issues (4). Although several cross-sectional studies consistently showed high levels of depression and anxiety during the initial phase of the pandemic, less data is available about long-term effects on the child and adolescent's mental health. A longitudinal study assessing psychopathological symptoms in adolescents after one year of the pandemic has found that anxiety and maladaptive behaviors such

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as self-harm ideation, self-harm behaviors, and aggressiveness scores tend to ascend at the follow-up interview. In contrast, there was no difference for depressive symptoms one year later (5). Another follow-up survey study reported an increased rates of depression, anxiety, self-harm and suicide attempts (6).

In Turkey after the first COVID-19 case was detected on 11th March 2020, the measurements and school closure were implemented immediately. During April and May 2020, the restrictions were still continued. One year later, during March to May 2021, schools were closed again. Long duration of school suspension in Turkey is expected to have detrimental effects on child and adolescent's mental health well-being as schools are not only crucial for education but they also serve as a preventative environment for the youth. Long duration of staying home may have led to an increased rate of abusive home. For example, in China, reports of domestic violence were tripled during the lock-down in February compared the previous pre-pandemic period (7).

Despite various reports across the world stating the early and late effects of pandemic on youth's mental health, up to our submission date, there is no study from Turkey which has evaluated the effect of the pandemic on child and adolescent psychiatric emergency admissions. Before the pandemic, visits to pediatric emergency departments (ED) had been increasing over the last several years (8). EDs are vital for the care of children and adolescent mental health problems. They are becoming more and more important due to insufficient pediatric outpatient clinic capacity (9). At the acute phase of the pandemic, when staying-home orders were first implemented, the number of presentations related to mental health issues to the ED had decreased 43% while the proportion of Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5) specified mental-health disorder related visits had increased (10). A study from Ireland also found that while hospital admissions with mental health issues fell by 2.6% during the initial lockdown but the admissions increased even above the pre-COVID levels from July 2021 to December 2021 (11). But we are lack of information about ED presentations during the pandemic and the reflection

of the pandemic on child and adolescent's mental health in Turkey. Therefore, the present study first aimed to investigate how the pandemic has affected ED visits first and second year of the pandemic compared to the one year before and secondly, to assess whether COVID-19 pandemic changed the presentations of diagnoses and chief complaints of the patients across three years.

METHOD

This is a retrospective study which was conducted at one of the largest mental health hospitals in Istanbul, Turkey. Child and adolescent psychiatry unit of the hospital served as the only child psychiatry emergency unit and the inpatient unit during the pandemic.

Data was extracted from the electronic database of the hospital. The study population was described as all patients who applied to Pediatric Psychiatry Emergency Department from March to May of 2019, 2020 and 2021 as we compared these same three-month time periods for consecutive three years. Time periods were selected specifically to coincidence with the beginning and end of the strict restrictions in Turkey due to COVID-19 pandemic. March- May 2019, 2021 and 2022 was described as a pre-pandemic, pandemic, and mid-pandemic period, consecutively.

Data regarding the total number of ED visits, age, sex, means of arriving to the emergency department, treatment procedure, discharge status, and primary diagnosis at discharge were collected.

Descriptive statistical analyses, ANOVA and Chi-square tests were performed to assess data among three time periods. All P values were two-tailed and significance was set at a p value less than 0.05. Bonferroni correction was used to adjust the critical value for multiple comparisons. All analyses were performed with SPSS, version 22. The study protocol was approved by a qualified ethical board.

RESULTS

Based on descriptive statistics, a number of variables were compared among March to May 2019,

Table 1. Sociodemographic and administrative characterization of emergency psychiatric visits

	Prepandemic, March to May 2019	Pandemic, March to May 2020	Mid-pandemic, March to May 2021	p value
Total visits, n (%)	111 (32.8)	55 (16.3)	172 (50.9)	
Age, mean (SD)	15.46 (2.23)	15.78 (1.94)	15.70 (2.31)	P=0.59
Sex, n (%)				
Female	59 (53.2)	29 (57.7)	100 (58.1)	p=0.63
Male	52 (46.8)	26 (47.3)	72 (41.9)	
The means of arrival, n (%)				
With ambulance				
With family	19 (17.1)	14 (25.5)	31 (18.0)	p= 0.39
	92 (82.9)	41 (74.5)	141 (82.0)	
Outcome, n (%)				
Need for injection n (%)	30 (27.0)	15 (27.3)	51 (29.7)	p=0.87
Need for oral treatment	48 (43.2)	27 (49.1)	89 (51.7)	p=0.37
Blood test	23 (20.7)	10 (18.2)	30 (17.4)	p=0.78
Drug blood level	4 (3.6)	2 (3.6)	5 (2.9)	p=0.93
Discharge status, n (%)				
Referral to the inpatient clinic	30 (27.0)	17 (12.7)	14 (8.1)	p<0.001
Close monitoring	31 (27.9)	14 (25.5)	54 (31.4)	
Control at the outpatient clinic	25 (22.5)	30 (54.5)	95 (55.2)	
No need to control	25 (22.5)	4 (7.3)	9 (5.2)	

2020, 2021. The exact comparison date was determined 11th March when the first COVID-19 case was seen in Turkey and the restrictions immediately occurred after.

The study sample included 338 patients who applied to psychiatry emergency service during the same year period, March to May 2019, 2020, and 2021. Sociodemographic variables of the patients that had applied to the ED during the pandemic and the administrative characterization of the patient's visits were shown in Table 1. In total, the number of emergency department admissions decreased during the first period of pandemic months (March-May 2020), relative to the same period in 2019, from 111 patients to 55 in 2020 (a 49.5% decrease). Similarly, in the same period of 2021, the mid-pandemic months, the number increased to 177 patients (a 97.3% increase) compared to pandemic period.

The mean age of the sample was similar among the three years, which was 15.4, 15.7 and 15.7 respectively in 2019, 2020 and 2021 (p=0.5). Similarly, before and after the pandemic, the female participants ratio was 53.2, 57.7 and 58.1 respectively and remained stable (p=0.63).

The mode of arrival at the emergency department, whether with family or ambulance, was not changed among the three years (p=0.31).

With regards to comparison of outcomes of patients in the emergency department, the ratio of the need for psychopharmacological injection

treatment (p=0.87) and the need for psychopharmacological oral treatment had not changed during the past three years (p=0.37). Furthermore, the ratio of consulting to blood test (p= 0.78) or drug blood level (p=0.93) remained the same between pre and mid pandemic periods compared to pandemic period.

In terms of disposition ways, the patients were separated into four categories as; referral to an inpatient unit, close monitoring at the outpatient clinic, routine control at the outpatient clinic, and no need for a control group. The ratio and the number of patients referred to the inpatient psychiatric unit was the highest in 2019 compared to the same period in 2020 and 2021 (p<0.001). When the ratio was 27.0 % in 2019, this number was 12.7% and 8.1% respectively, in 2020 and 2021. There was no statistical difference between 2020 and 2021. On the contrary, when we excluded the patients who needed to be referred to the inpatient unit and aggregated the groups as close monitoring and control group; during the pandemic and mid-pandemic periods patients in the close monitoring and control group were far higher than those during the pre-pandemic period (91.7% in 2020, 94.3% in 2021 and 69.1% in 2019; p<0.001).

The reasons for applying to the emergency department were categorized into twelve separate groups and results are presented in Table 2. We observed decreases in frequency and the percentage of the emergency service visits across most diagnostic groups between 2019 and 2020. Nevertheless, the percentage of patients in diagnostic groups of

Table 2. Diagnosis groups of emergency psychiatric visits

	Prepandemic, March to May 2019	Pandemic, March to May 2020	Mid-pandemic, March to May 2021	
NSSI, n (%)	33 (29.7)	14 (25.5)	33 (19.2)	p=0.11
Suicidal behaviors, n (%)	17 (15.3)	5 (9.1)	21 (12.2)	p=0.5
Homicidal behaviors, n (%)	16 (14.4)	3 (5.5)	37 (21.5)	p=0.016*
Bipolar disorder, n (%)	23 (20.7)	6 (10.9)	23 (13.4)	p=0.14
Psychotic disorder, n (%)	10 (9.0)	3 (5.5)	27 (15.7)	p=0.65
ASD and MR, n (%)	20 (18.0)	11 (20.9)	24 (14.0)	p=0.47
Depressive disorders, n (%)	28 (25.2)	16 (29.1)	52 (30.2)	P=0.65
ADHD and CD, n (%)	34 (30.8)	16 (29.1)	34 (19.8)	P=0.087
PTSD and related disorders, n (%)	7 (6.3)	7 (12.7)	17 (9.9)	P=0.3
Anxiety disorders and OCD, n (%)	11 (9.9)	11 (20.0)	45 (26.2)	P=0.004*
SUDs, n (%)	11 (9.9)	5 (9.1)	11 (6.4)	P=0.5
Conversion disorders and dissociative disorders, n (%)	7 (6.3)	0	20 (11.6)	P=0.016*

NSSI: non-suicidal self injurious behaviors; ASB: autism spectrum disorders; MR: mental retardation;

ADHD: attention deficit hyperactivity disorder; CD: conduct disorder; PTSD: post-traumatic stress disorder;

OCD: obsessive compulsive disorder; SUDs: substance use disorders

autism and mental retardation, depression, trauma and related diagnosis, and anxiety and obsessive-compulsive disorder groups was higher than in 2019 but only in anxiety and obsessive-compulsive disorder group reached statistical difference. In 2021, mid-pandemic period, the ratio was higher and also statistically meaningful (in 2019 26.2%, in 2021 9.9%; $p < 0.001$).

There were not any presentations of conversion and dissociative disorders during the pandemic period versus the pre-pandemic period when seven patients visited the emergency department. In addition, in the mid-pandemic period, visit rates in this group rose to their highest level with 20 patients.

There was a decrease in the proportion of patients represented with homicide risk during the pandemic year with 3 patients (5.5%) compared with 16 (14.4%) and 37 (21.5%) patients respectively during pre-pandemic and mid-pandemic period ($p = 0.016$).

DISCUSSION

To our knowledge, this is the first study from Turkey evaluating the effects of the first and mid-period of the COVID 19 pandemic on child adolescent psychiatry emergency visits. We expected that COVID 19 pandemic would decrease the demand for emergency psychiatric visits and after the acute peri-pandemic period, the hospitalization rate would increase.

The overall number of child and adolescent psychiatric emergency department visits declined by 49.5% in 2020 during pandemic period with implementation of COVID-19 related measures. Previous literature found that the number of ED visits dropped by 43 % sharply between mid-March 2020 and April 2020 (10). Another report demonstrated that the weekly number of ED admissions for children aged 14 years and below was 70% lower during the of March 29 to April 25, compared to the same period of 2019 (12). The same report in which all age categories were included, the overall number of visits declined by 42% for all age group. Similarly, a report from Portugal reported that compared to the previous year, the demand for psychiatric emergency care decreased by 52.2% (13). In addition to these studies, other studies also showed a substantial reduction in applications to the emergency psychiatric care at the early period of pandemic (14,15,16).

Furthermore, we found that corresponding period of 2021, the total number of ED visits increased to higher level than the same period of 2020 and even 2019. Similarly, Leeb et. al (10) reported that after acute period of pandemic (mid-March to April) the number of visits increased again through October 2020. In addition, in a study evaluating mental-health related consultation, in early- pandemic period, patients requiring mental health consultation was lower than pre-pandemic period. However, this number exceeded pre-pandemic period by July 2020 (17). An Irish study also reported a similar initial decrease in psychiatric presentations for all age groups, especially when the restrictions and lockdown periods were implemented.

However, in following lockdowns, presentations increased for those below 18 years (18). McNicholas et. al also described after an initial decline, both routine and urgent referrals increased by %50 from September, compared with previous years (2018 and 2019) (19).

The immediate drop in visits to ED after pandemic restrictions had been declared in March-May 2019 could also show that because people were afraid of being infected in the hospital, they did not choose to apply to ED. But one year later, in the mid-pandemic period, the rise in visits to ED could have been because people were getting used to pandemic conditions and/ or they needed acute psychiatric care due to collective and cannot further be postponed negative effects of COVID 19 pandemic on mental health.

In 2020 and 2021 with the rate of 12.7 and 8.1%, compared to 2019 (26.1%), there was a statistically meaningful decrease in admission to inpatient units from emergency department. A similar result was found in a study from Canada, in which the first and second half of March were compared (20). This decrease in the rate of admission to the inpatient psychiatric unit may reflect several reasons. The first and second reasons maybe because of the drop in the overall number of ED visits and minimizing the capacity of the inpatient unit due to strict coronavirus measures. Another reason might be related to the higher threshold criteria implemented by psychiatrists while they were deciding to admit a patient to the inpatient unit aiming to minimize the risk of infection. Despite the fewer hospitalization rate, in 2020 and 2021, the ratio of patients who needed to be closely monitored and controlled frequently at the emergency service or outpatient clinic got increased compared to 2019. That is, only the patients who were in more severe clinical condition might have applied to the emergency psychiatric care. Taken together, the decreased rates of ED visits and hospitalization rates do not reflect that pandemic has no implications on mental health in children and adolescents. Indeed, the decreased rate of hospitalization might demonstrate the huge need for inpatient child and adolescent psychiatric units. But unfortunately, because of COVID-19 related measures, the total number of beds in inpatient units were lessened. Therefore, the decreased hospitalization rate might

have resulted from the insufficiency of child and adolescent inpatient psychiatric units rather than the decreased number of severe psychiatric patients who had needed to be transferred to aforementioned inpatient psychiatric units. The increased need of close monitoring and control appointments support this hypothesis. Our results are in line with an Italian study in which they stated the number of ER admissions resulting in psychiatric referral also got increased. They also found that the patients who had no specific indication as result of psychiatric consultation got decreased (21). To sum up, these data show us that the severity of the clinical conditions who applied to emergency services got increased during the course of pandemic.

We also found that the ratio of patients who were diagnosed with autism spectrum, mental retardation, depression, trauma and related, anxiety and obsessive-compulsive disorders got increased. But the statistical significance was only found in anxiety and obsessive-compulsive disorder groups as compared with 2019. These findings are similar to the research emphasizing that the relative risk of receiving anxiety disorder, as well as depressive disorder, were higher during the pandemic compared to the pre-pandemic period (22). Another research also reported a significant proportional increase in anxiety disorders during the COVID-19 period relative to the pre-COVID-19. In addition, anxiety rates amongst young people during COVID-19 have been reported to range from 19% to 37% in a systematic review (23). Though these results are lack of any comparison to the previous years. Another explanation for elevated rate of presentations of these disorders might be related with decreased total number of ED visits during the pandemic and mid-pandemic period. Patients with relatively more chronic psychiatric conditions such as psychosis and bipolar disorder may have been avoided applying to the ED during the pandemic unlike the patients who suffer from anxiety. It is also possible that staying at home because of the restrictions might have provided convenient conditions for many parents to strictly observe and seek medical care if their children are having any serious mental health problems. In this line, increased rate of anxiety disorders might indicate the elevated rate of acute psychiatric problems in community after COVID 19 pandemic has begun. However, we should interpret these results cau-

tiously because our data do not provide information about the clinical severity of these patients or whether these patients applying to the ED for the first time.

In our study, the increased number of presentations of anxiety related disorders with 45 patients (26.2%) are even more apparent for the mid-pandemic period, 2021, compared to the pandemic period, 2020 with 11 patients (20%). A systematic review which investigated the social isolation and loneliness on the mental health of children in the context of COVID-19 reported the duration of loneliness was more strongly associated with anxiety than intensity of loneliness. Loneliness also has longitudinal effects on later anxiety (24). This is important in the context of COVID-19 measures, as in Turkey, similar to other countries, schools were remained closed for a long period which possibly has contributed to social isolation for young people. So, it is expected that extended period of loneliness may have contributed anxiety symptoms in this age period.

Despite many stressors such as loneliness, social isolation and contamination fear, the rate of hospital presentations for self-harm or suicide ideation and attempt rates since COVID-19 pandemic, have not been accelerated. However, other studies found that there were more child and adolescents presenting with self-harm and suicide ideation after the pandemic (25, 26, 27). A study from England reported that presentations increased from 27% to 43% relative to the pre-pandemic (27). In our study, despite the rate of self-harm and suicide ideation have not been increased, the number of patients presenting with these problems were similar for the pre-pandemic and mid-pandemic period although there was an initial reduction in self-harm and suicide ideation presentations in the early period of the pandemic. Early reduction phase also was stated in several publications (28,29,30).

Moreover, when we reanalyzed our data for only females, same results have been obtained. In contrast to our findings, some studies have reported that among adolescents, school-aged girls (10-17 years) showed increased self-harm or suicidal ideation presentation rates since COVID-19. There was also a significant decline in the rate of self-harm in men aged 18-24 years (25). In line with our study, Hill et al. (28) did not find an association

between suicide related behaviors and demographic characteristics including sex during COVID-19 period (27).

Our study has some limitations. First of all, our study has a retrospective design and since the child and adolescent psychiatry emergency of our hospital is mostly focused on urgent evaluation and referral, differential diagnosis sometimes is postponed to follow-up interviews in some patients, and these patients may be coded with general psychiatric examination or complaint/symptom focused ICD codes. This situation may have shown the diagnosis distribution rates to be different than they actually are.

To sum up, our study clearly stated that in line with the previous global literature, child and adolescent psychiatry admissions are also drastically reduced at the beginning of pandemic, correlated with strict preventive precautions taken in Istanbul, Turkey as well. Although, stating some controversial results and harboring some limitations, our study is especially valuable as encompassing and examining three-year time period and contributing to global child and adolescent psychiatry COVID literature on behalf of Turkey, as up to our submission date, no known publications have yet occurred.

Disclosure statement All authors declare no conflicts of interest addressed to this study.

Data Availability Electronic hospital data utilized in this study is not accessible due to hospital's confidentiality policy and ethical considerations.

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