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Emergency mental health care for children and adolescents outside of regular working hours: 7 years outcomes from a tertiary hospital

Onur Tuğçe Poyraz Fındık [a,*,1], Eray Fadıloğlu [b], Pınar Ay [c], Neşe Perdahlı Fiş [d]

[a] Istanbul Health and Technology University, Department of Psychology, Guest Lecturer, Istanbul, Turkey
[b] Van Training and Research Hospital, Child and Adolescent Psychiatry Clinic, Van, Turkey
[c] Marmara University, Medical Faculty, Department of Public Health, Istanbul, Turkey
[d] Marmara University, Medical Faculty, Department of Child and Adolescent Psychiatry, Istanbul, Turkey

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ABSTRACT

Objective: This study aims to define the clinical characteristics and management strategies of children and adolescents presenting with psychiatric crises to the emergency department (ED) of a tertiary health care facility outside of working hours, and to identify predictors of multiple ED visits among them.
Methods: From January 2012 to December 2018, retrospective records of patients presenting with psychiatric symptoms to the ED and examined by a child psychiatrist after 5 p.m. on weekdays and for 24 h on weekends and public holidays were analyzed.
Results: Our sample consisted of 1576 visits and 1364 patient (Female:Male=1.8:1, mean age=14.86 ± 2.72). The most common reason for visits was self-injurious thought or behaviors (SITB), and the most common diagnosis was depression. While depression was statistically more common in girls, attention deficit hyperactivity disorder, autism and/or intellectual disability (ASD/ID), psychotic disorders, and bipolar disorder were more common in boys. The forensic evaluation was the most common reason for visits among children younger than 6 years old. Of visits, 23% transferred to hospitalization. A history of mental health contact was the lowest in depression (37.5%), psychosis (34.1%), and substance use disorders (33%). Of patients, 10.8% had multiple visits. A history of mental health contacts, conduct disorder, ASD/ID, bipolar disorder, psychotic disorder, and dissociative disorder were predictors of multiple visits to ED with psychiatric reasons.
Conclusion: Emergency mental health care outside of regular working hours can be a critical step in the diagnosis and treatment of serious psychiatric disorders in children and adolescents.

1. Introduction

Psychiatric disorders occupy an important place in the mortality and morbidity burden worldwide. It is estimated that approximately one in three people in the general population suffers from psychiatric disorders during their lifetime (Steel et al., 2014; Auerbach et al., 2018). The prevalence of psychiatric disorders in children and adolescents is comparable to that of adults. While the global prevalence of psychiatric disorders in children and adolescents is estimated at 13% (Polanczyk et al., 2015), a recent population-based study in Turkey found a rate of approximately 17% (Ercan et al., 2019). However, only one in three adolescents with mental health problems is believed to have access to appropriate mental health services (Jensen et al., 2011; Merikangas et al., 2011). Addressing this high unmet need for mental health remains a major challenge for health systems. Difficult access to appropriate care results in high admission rates to emergency departments (EDs) with "psychiatric crisis".

Many studies in recent years have shown an increase in the number of visits to pediatric EDs due to mental health problems (Hoffmann et al., 2019; Kalb et al., 2019; Newton et al., 2009). Adolescents predominantly present to EDs with psychiatric crises, and suicide attempts, mood disorders, and substance use disorders are among the most common reasons for these ED visits (Kalb et al., 2019; Mapelli et al., 2015; Newton et al., 2009). It has been reported that visits with mental health-related problems are associated with more time and other resources consumption than nonmental health visits in the ED setting

* Corresponding author.
E-mail address: onur.poyraz@istun.edu.tr (O.T. Poyraz Fındık).
[1] ORCID: orcid.org/0000-0002-2376-7592.

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(Mapelli et al., 2015; Sheridan et al., 2015). However, approximately one-third of these visits returns repeatedly, which is a serious concern for healthcare providers (Mapelli et al., 2015; Newton et al., 2010). Female sex, older age, mood disorders and psychotic disorders have been reported as remarkable predictors for repeated visits (Newton et al., 2009, 2010). Another importance of repeated ED visits is that they provide insight into the poor symptom management in the course of chronic conditions such as schizophrenia (Kessler and Lev-Ran, 2019; Saarento et al., 1998).

ED visits can be a unique opportunity to detect some psychiatric disorders in children and adolescents. Identifying the utilization pattern of EDs for those with mental health problems is critical because it can be the entry point to the health care for the population with poor service access. Despite this critical role of EDs in psychiatric care, EDs are often not adequately designed for these patients. Very few facilities have mental health professionals, and access to psychiatric consultations outside of work hours is rare, especially in child and adolescent psychiatry (Baraff et al., 2006). Kalb et al. found that mental health professionals assessed only 16% of individuals who came to the ED with psychiatric complaints (Kalb et al., 2019). Moreover, emergency service providers generally have relatively low awareness and little experience with psychiatric symptoms (Habis et al., 2007).

Marmara University Pendik Training and Research Hospital has been providing round-the-clock emergency mental healthcare services by the child and adolescent psychiatry department to those who present to the ED with psychiatric complaints since 2012. Therefore, in this study, we aimed to share our data about the using of this service outside of regular working hours, which is a rare practice in child and adolescent psychiatry services. Our study aimed to define the clinical characteristics (symptoms, diagnosis i.e.) and management strategies of children and adolescents presenting with psychiatric crises to the ED of a tertiary health care facility outside of regular working hours, and to identify predictors of multiple ED visits among them.

2. Methods

2.1. Setting

The present study was performed in the pediatric ED of Marmara University Pendik Training and Research Hospital. The hospital is a multispecialty teaching and referral center which provides emergency healthcare for both adults and children as separate medical units. The pediatric ED of the hospital is one of the busiest among the pediatric services in Istanbul, and it records over 100,000 visits per year. Also, our ED provides round-the-clock psychiatric care (for 24-h, even on weekends/holidays) by a child and adolescent psychiatrist. Children with behavioral or emotional issues, or who are brought by legal agencies present to the pediatric ED then consult with on-duty child psychiatry residents. Many other mental health clinics, both private and public, provide services during the daytime (regular) work hours, and patients can go to their own doctors or the nearest mental health care facilities when they have an emergent psychiatric condition. But, outside of regular hours, our hospital is the only psychiatric care center for children and adolescents on the Anatolian side of Istanbul which has a population of 4.5 million. In this regard, our sample is very representative, as it is the only child psychiatric emergency center that serves a large population outside of regular work hours.

All children and adolescents who come to the ED with psychiatric symptoms, as well as those who come to the ED for other medical reasons but have psychiatric evaluation indications, are referred to the child and adolescent psychiatry unit. After completing the bedside examination by a child psychiatry resident on duty, an academic staff or a specialist who completed their training in child and adolescent mental health reviews the diagnosis and develops a treatment plan on call. Since there is no inpatient psychiatric service, patients are transferred if inpatient treatment is required. If any clinical follow-up is needed, the outpatient clinic appointment is made prior to ED discharge and the patient and family are informed.

2.2. Study design and data sources

This study was a clinically based, retrospective study that examined children and adolescents aged 0–18 years who were seen at the ED because of psychiatric reasons between January 01, 2012, and December 31, 2018, on weekdays between 5 p.m. and 8 a.m. and on weekends. Data were obtained from the hospital's computerized data collection system. All patients were screened for demographic, clinical, and visiting features, including age and gender, reasons for visits, history of mental health contact, diagnoses based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), ambulance use, psychopharmacologic medications, referral to inpatient or outpatient services, refusal of treatment or unauthorized hospital leave, and completion time of consultation (the difference between the minute the consultation request was entered in the hospital system and the minute the consultation was completed was considered the psychiatric evaluation completion time). Each visit was assigned to a single primary reason for coding 'reason for visit' according to conditions requiring urgent psychiatric evaluation of the patient: self-injurious thought or behavior (SITB), aggression/violence, somatic symptoms, psychotic symptoms such as perceptual (hallucinations, etc.) and thought disorders, substance abuse, motor system problems (such as spasms due to drug side effects or tics, etc.), forensic issues (forensic assessment and report requests due to sexual/physical/emotional abuse and/or events such as running away from home, kidnapping), mood problems (depressed or elevated mood), anxiety, and other causes (obsessions, relationship problems, mental confusion or differential diagnosis of other diseases, etc.). Approval for the study was obtained from the Marmara University Ethics Committee.

2.3. Statistical analysis

We first determined the patient and clinical features of the sample using descriptive statistics by gender and age groups. The reason for visits and the distribution of psychiatric diagnoses by year were examined. Management strategies for the most common psychiatric diagnoses were presented with descriptive statistics. In addition, we ran our regression model with "Binary Logistic Regression" to determine the strength of associations between multiple visits and selected clinical and patient features. Age groups, gender, history of mental health contact, comorbidity, reason for visit, and psychiatric diagnosis were examined using univariable logistic regressions. The variables in the univariable analysis with $p < 0.1$, and gender and age, which are clinically important parameters, were included in the multivariable model. The Statistical Program for the Social Sciences-SPSS for Windows, Ver 20.0 software was used to analyze the data. The chi-square (χ^2) test was used to compare quantitative data, and Student's t-test, Mann-Whitney U test and Independent Sample Kruskal Wallis test were used to compare continuous data. The significance level was accepted as $p < 0.05$ for all analyzes.

3. Results

3.1. Patients characteristics and reasons for visits

Our sample included 1576 visits and 1364 patients. The ratio of female to male was 1.8:1 (female, n = 884, 64.8%; male, n = 480, 35.2%) and the mean age was 14.86 ± 2.72. The mean age of girls (15.01 ± 2.46, min: 2.5-max: 18) was higher than that of boys (14.59 ± 3.14, min: 1.83- max: 18), and the difference was statistically significant ($p = 0.007$, $t = -2.702$). Fifty-five patients were in an institutional care, 5 were under custody, 13 were taken to the police for their aggressive behaviors, and 5 were married. Fifty-six patients (3.6%) left the ED

without medical advice. The rate of ambulance use during visits was 15.8% (n = 249). Of visitors, 3.4% (n = 53) were referred to our ED for psychiatric consultation by other hospitals. During the seven years, the distribution of age groups and gender showed no statistically significant change between years ($p > 0.05$).

The main reasons for visits of patients were: SITB in 41.2% (n = 649), aggression/violence in 20.9% (n = 330), somatic symptoms in 11.7% (n = 185), psychotic symptoms in 5.5% (n = 87), alcohol or substance abuse in 4.2% (n = 66), motor system problems in 4.1% (n = 65), forensic issues in 3.6% (n = 57), mood problems in 3.2% (n = 50), anxiety in 2.2% (n = 34), and other causes in 3.4% (n = 53).

A statistical difference was found in the distribution of reasons of visits by gender and age group (Table 1). The most common reason for visits was SITB in girls and aggression/violence in boys. The most common reason for urgent psychiatric evaluation in the preschool period was forensic issues, aggression/violence at age 6–10 years, and SITB after age 10 years. The distribution of reasons for visits showed a statistically significant change over the 7 years ($p < 0.001$). The distribution of the three most common reasons for visits over the years is shown in Fig. 1. The mean completion time of consultation was 3.56 ± 5.65 h (min=0.5, max=93 h). According to reasons for visits the completion time of consultation showed a statistical difference ($p < 0.001$), and SITB, substance abuse, and forensic issues took the longest time (Table 1).

3.2. Distribution of psychiatric diagnoses

When examining the distribution of patients' psychiatric disorders, we excluded those for whom no diagnostic information was available in the hospital registry system (n = 94, 5.9%), and those for whom the diagnosis couldn't established based on the emergency psychiatric examination (n = 149, 9.4%). Also, visits for whom return visits (n = 212, 13.4%) after the first contact for those with multiple visits were excluded so that one patient was represented only once in the analysis. Of the remaining patients, 17.7% (n = 198) had no psychiatric disorder, and 17.2% (n = 193) had comorbid psychiatric diagnoses (2 or more psychiatric diagnoses). When analyzing the distribution of diagnoses by gender, depression was the most common psychiatric diagnosis in girls and autism spectrum disorder and/or intellectual disability (ASD/ID) in boys. The distribution of the psychiatric diagnoses is presented in Table 2.

When analyzing the change in psychiatric diagnoses over the years, there was a significant increase in the frequency of ADHD ($p = 0.033$) and bipolar disorder ($p = 0.025$), while there was no statistical difference in the other diagnoses. The change in the distribution of psychiatric diagnoses over the years is presented in Fig. 2.

61.5% of patients with ADHD, 73% of patients with ASD/ID, and 72.5% of patients with bipolar disorder had a history of previous mental health contact. Those diagnosed with substance abuse (33%), psychosis (34.1%), and depression (37.5%) had the lowest rate of mental health service contact, meaning that for about two-thirds of patients with these diagnoses, the first psychiatric contact was an ED visit.

3.3. Management and discharge

Discharge and prescription characteristics at visits for the most common diagnoses of depression, bipolar disorder, psychosis, substance use disorder, ADHD, and ASD/ID are shown in Table 3. While transfer to hospitalization was the most common for psychotic disorders, injection of antipsychotics was the most common in bipolar disorders. Duration of consultation was the longest for bipolar disorders and the shortest for psychotic disorders. An outpatient appointment was made in 63.7% of depression, 62% of bipolar disorders, 61.9% of psychosis, 32.6% of substance use disorders, 57.7% of ADHD, and 46.5% of ASD/ID.

In 11.5% (n = 181) of all visits, patients were advised to undergo medical tests and examinations to rule out other medical reasons.

Table 1
Reasons for the visits to the ED outside of regular working hours.

		SITB n (%)	Aggression / Violence n (%)	Somatic Complaint n (%)	Psychotic Symptoms n (%)	Substance Abuse n (%)	Motor Symptoms n (%)	Forensic Issues n (%)	Mood Symptoms n (%)	Anxiety n (%)	Others n (%)	p
Sex	Female	506 (49.7)	145 (14.2)	133 (13.1)	52 (5.1)	17 (1.7)	37 (3.6)	40 (3.9)	35 (3.4)	17 (1.7)	36 (3.5)	<0.001
	Male	143 (25.6)	185 (33.2)	52 (9.3)	35 (6.3)	49 (8.8)	28 (5)	17 (3)	15 (2.7)	17 (3)	17 (3)	
Mean age (M±SD)		15.43 ± 1.9	14.68 ± 2.8	14.68 ± 2.98	14.53 ± 2.63	16.13 ± 1.31	13.92 ± 3.79	11.65 ± 4.49	15.27 ± 1.64	14 ± 3.27	13.05 ± 3.52	<0.001[a]
Age Groups	Under 6 years	2 (7.7)	5 (19.2)	3 (11.5)	–	–	2 (7.7)	10 (38.5)	–	2 (7.7)	2 (7.7)	<0.001
	6 years and 9 years 11 months	10 (12)	20 (24.1)	15 (18.1)	6 (5)	–	13 (15.7)	11 (13.3)	1 (1.2)	3 (3.6)	5 (6)	
	10 years and 13 years 11 months	101 (34.9)	73 (25.3)	38 (13.1)	22 (7.6)	3 (1)	5 (1.7)	11 (3.8)	9 (3.1)	8 (2.8)	19 (6.6)	
	14–18 years	535 (45.5)	231 (19.1)	128 (10.9)	59 (5)	63 (5.4)	45 (3.8)	45 (2.1)	40 (3.4)	22 (1.9)	27 (2.3)	
Duration of consultation (hours) (M±SD)		4.19 ± 6.19	3.3 ± 6.48	2.71 ± 3.80	2.72 ± 4.28	4.40 ± 5.49	2.3 ± 3.49	4.17 ± 5.22	3.04 ± 3.5	1.85 ± 2.61	2.78 ± 5.32	<0.001[a]
Years	2012	81 (39.3)	19 (9.2)	36 (17.5)	11 (5.3)	12 (5.8)	16 (7.8)	8 (3.9)	6 (2.9)	4 (1.9)	13 (6.3)	<0.001
	2018	143 (43.9)	82 (25.2)	35 (10.7)	12 (3.7)	9 (2.8)	10 (3.1)	12 (3.7)	13 (4)	4 (1.2)	6 (1.8)	

[a] Independent Samples Kruskal Wallis Test.

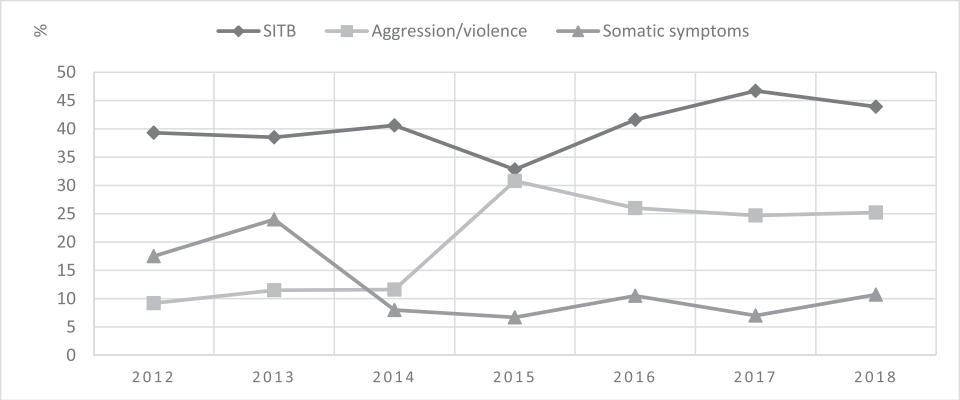

Fig. 1. Change in the distribution of the three most common reasons for visits over the years.

Table 2
Distribution of psychiatric diagnoses of the patients (n = 1156).

Psychiatric diagnoses	Total n (%)	Sex		p	Age groups				p
		Female n (%)	Male n (%)		Under 6 years old n (%)	6–10 years old n (%)	11–14 years old n (%)	15–18 years old n (%)	
No disorder	198(17.7)	144(19.7)	54(13.8)	**.013**	8(47.1)	13(22.8)	33(15.8)	144(17.2)	**.008**
Depression	387(34.5)	319(43.7)	68 (17.4)	**<0.001**	–	5 (8.8)	56(26.8)	325 (38.8)	**<0.001**
Bipolar Disorder	73 (6.5)	46 (6.9)	27 (6.3)	.696	–	–	12 (5.4)	61 (7.3)	.086
ADHD	110 (9.8)	49(6.7)	61 (15.6)	**<0.001**	2(11.8)	12(21.1)	31(14.8)	65 (7.8)	**<0.001**
CD/ODD	51 (4.5)	27(3.7)	23(6.1)	.062	–	2(3.5)	9(4.3)	40(4.8)	.601
ASD/ID	111 (9.9)	42 (5.8)	69 (17.6)	**<0.001**	3(17.6)	10 (17.5)	28(13.4)	70 (8.4)	**.019**
Substance Use Disorders	75(6.7)	29(4)	46 (11.8)	**<0.001**	–	–	3 (1.4)	72 (8.6)	**<0.001**
Psychotic Disorders	82 (7.3)	34(4.7)	48 (12.3)	**<0.001**	–	–	9 (4.3)	73 (8.7)	**.001**
Anxiety Disorders	70 (6.2)	44(6)	26 (6.6)	.682	1 (5.9)	11(19.3)	17 (8.1)	41 (4.9)	**.002**
Conversion Disorder	56 (5)	43 (5.9)	13 (3.3)	.060	–	4 (7)	16 (7.7)	36 (4.3)	.123
Dissociative Disorders	16 (1.4)	12 (1.6)	4 (1)	.404	–	–	2 (1)	14 (1.7)	.417
DMDD	12 (1.1)	5(0.7)	7(1.8)	.087	–	1 (1.8)	5 (2.4)	6 (0.7)	.236
OCD	24(2.1)	10(1.4)	14 (3.6)	**.015**	–	4 (7)	10 (4.8)	10 (1.2)	**.003**
Tic Disorder	15 (1.3)	10 (1.4)	5 (1.3)	.899	–	5(8.8)	4(1.9)	6 (0.7)	**.002**
Stress Related Disorders	43(3.8)	32 (4.4)	11 (2.8)	.095	3 (17.6)	4 (7)	12 (5.7)	24 (2.9)	**.017**

CD: Conduct Disorder; ODD: Oppositional Defiant Disorder; OCD: Obsessive Compulsive Disorder; ADHD: Attention deficit Hyperactivity Disorder; DMDD: Disruptive Mood Dysregulation Disorder; Stress Related Disorders: Acute stress reactions, posttraumatic stress disorder, and adjustment disorders. Bold represented statistically significant results.

Management strategies were analyzed by categorizing them into 4 groups: assessment only (no outpatient appointment, no prescription), outpatient appointment only, prescription (may or may not be an outpatient appointment), and transfer to hospitalization. The percentage of prescriptions attributed to the most commonly used drug groups is also shown in Table 3.

3.4. Predictors of multiple visits

10.8% (n = 147) of patients had more than one ED visits with psychiatric complaints within 7 years. Of these, 44.2% (n = 65) revisited within the first month of the index visit, 12.9% (n = 19) revisited between months 1% and 3%, and 42.9% (n = 63) revisited 3 months after the index visit. Predictors of multiple visits to the ED with psychiatric crisis outside of regular working hours were analyzed using univariable (Table 4) and multivariable analysis (Table 5).

Direct logistic regression was performed to assess the influence of a number of factors on the likelihood of repeated visits. The final model included eleven independent variables (gender, age group, history of mental health contact, reason for visit, having conduct disorder, having ASD/ID, having psychotic disorders, having bipolar disorders, having dissociative disorders, having tic disorder, having comorbidity). As presented in Table 3, six of the independent variables made a statistically significant contribution to the model (history of mental health contact, having conduct disorder, having ASD/ID, having psychotic disorders, having bipolar disorders, having dissociative disorders).

4. Discussion

Our study provides insight about child and adolescent psychiatric crises in the ED setting outside of regular working hours. The long duration of the assessment, the high need for medical tests, use of ambulances, and hospitalization, the difficulty in clarifying a psychiatric diagnosis in an emergency setting show the complexity of emergency psychiatric care. In this regard, our study, although including a relatively small population in the pediatric ED, defines a group with high utilization of health care resources, which is consistent with previous studies (Sheridan et al., 2015; Mapelli et al., 2015).

Although reasons for visits to the ED differed according to age and gender, consistent with the reports of other authors who have pointed out the increasing incidence of self-harm in pediatric EDs (Lo et al., 2020; Grupp-Phelan et al., 2009; Victor and Thorup, 2021; Cutler et al., 2019), about half of all visits were due to self-harm in our study. Another striking finding is that girls are two times more likely than boys to present to the ED with psychiatric symptoms, Gender discrepancy varies

Fig. 2. Changes in the distribution of psychiatric diagnoses over the 7 years.

widely between studies (Cutler et al., 2019; Sheridan et al., 2015; Benarous et al., 2019). Nevertheless, our results are alarming about self-harm and girls' urgent mental health crises.

The number of visits to our ED with aggression/violence has increased significantly over the years. The high rate of physical aggression suggests that physical resources (physical restraint, isolation rooms, support staff, etc.) are needed to manage these behaviors in EDs (Newton et al., 2009). Additionally, our results show that psychiatric evaluations for forensic issues are an important component of psychiatric care for young children in the ED setting. Similarly, Cutler et al. pointed out the increasing trauma and stress-related disorders in emergency cases (Cutler et al., 2019). Therefore, it is in the best interest of children for facilities providing emergency psychiatric services to collaborate with clinicians and teams experienced in the field of forensic assessment. It might be deduced that identifying presentation patterns and symptom trends would be helpful to design EDs for specific needs.

Those most likely to use emergency psychiatric services were those diagnosed with depression. In our study, rates of depression were found to be prevalent disproportionately in the older age groups. Similar studies have also shown that depression in adolescents is among the most common diagnoses among those presenting with psychiatric complaints (Cutler et al., 2019; Benarous et al., 2019). Depression remains a cause of severe disability and mortality (Lépine and Briley, 2011; Clayborne et al., 2019). Given the negative impact of the pandemic on young people in recent years, it is reasonable to assume that rates have increased, and service provision has decreased (Samji et al., 2021). However, there is a significant gap between the need in this area and the provision of mental health services. By presenting these data, we are calling for effective treatment strategies and preventive mental health studies to be on the public health agenda today as more

Table 3
Management of the most frequent psychiatric disorders in the ED setting.

	Depression (n = 444) n (%)	Bipolar Disorders (n = 108) n (%)	Psychotic Disorders (n = 113) n (%)	Substance Use Disorders (n = 95) n (%)	ADHD (n = 137) n (%)	ASD/ID (n = 159) n (%)
Assessment only	50 (11.3)	8 (7.4)	9 (8)	31 (32.6)	38 (27.7)	28 (17.6)
Outpatient appointment only	149 (33.6)	13 (12)	15 (13.3)	10 (10.5)	32 (23.4)	24 (15.1)
Transfer to hospitalization	105 (23.6)	28 (25.9)	32 (28.3)	18 (18.9)	7 (5.1)	20 (12.6)
Prescription	140 (31.5)	59 (54.6)	57 (50.4)	36 (37.9)	60 (43.8)	87 (54.7)
Atypic antipsychotic						
Oral	113 (80.7)	34 (57.4)	37 (68.4)	25 (69.5)	43 (71.7)	59 (67.9)
Injection	1 (0.7)	–	1 (1.8)	–	–	–
Typical antipsychotic	–					
Oral	–	–	3 (5.3)	–	–	5 (5.7)
Injection	8 (5.7)	23 (39)	15 (26.3)	6 (16.6)	13 (21.6)	29 (33.3)
SSRI	26 (18.4)	2 (3.4)	1 (1.8)	1 (2.8)	4 (6.7)	3 (3.4)
Benzodiazepine	–					
Oral	7 (5)	4 (6.8)	5 (8.8)	4 (11.1)	2 (3.3)	3 (3.4)
Injection	2 (1.4)	–	–	1 (2.8)	–	–
Mood regulator	1 (0.7)	1 (1.7)	–	–	1 (1.7)	–
Duration of consultation (hours) M±*SD*	3.71 ± 4.84	4.87 ± 11.58	2.47 ± 2.7	4.6 ± 4.56	3.32 ± 4.45	3.1 ± 4.96

Table 4
Univariable logistic regression analysis for predictors of multiple ED visits.

	OR (95% C.I)	p
Gender (ref. Male)	1.11 0.78–1.59)	.537
Age group	Ref	.422
Under 6 years old	0.31(0.01–5.19)	.159
6–10 years old	4.29 (0.56–32.67)	.287
11–14 years old	2.97 (0.39–22.19)	
15–18 years old		
Reasons for visits	1.05 (0.36–3.04)	.928
SITB	**2.57 (0.88–7.50)**	**.083**
Aggression/violence	1.15 (0.36–3.65)	.805
Somatic complaints	2.14 (0.64–7.07)	.211
Psychotic symptoms	0.56 (0.12–2.64)	.466
Substance abuse	1.21 (0.28–5.19)	.792
Mood symptoms	0.77 (0.13–4.51)	.778
Anxiety	1.75 (0.47–6.39)	.397
Motor system	0.42 (0.07–2.42)	.335
Forensic issues	Ref.	
Other		
History of mental health contact	**3.47 (2.42–4.97)**	**<0.001**
Psychiatric Diagnoses		
ADHD	1.47 (0.84–2.58)	.173
CD/ODD	**3.83 (2.04–7.21)**	**<0.001**
ASD/ID	**4.45 (2.84–6.96)**	**<0.001**
Psychotic Disorders	**2.43 (1.40–4.22)**	**.002**
Depression	0.89 (0.60–1.31)	0.558
Bipolar Disorders	**4.65 (2.75–7.84)**	**<0.001**
Anxiety Disorders	1.05 (0.49–2.24)	.891
Conversion Disorder	0.89 (0.38–2.12)	.808
Dissociative Disorders	4.66 (1.69–12.80)	.003
DMDD	2.08 (0.43–9.91)	.356
Substance Use Disorders	1.31 (0.66–2.62)	.436
OCD	1.67 (0.56–4.96)	.353
Stress Related Disorders	0.84 (0.29–2.39)	.752
Tic Disorders	3.06 (0.96–9.75)	.058
Comorbidity	**2.39 (1.60–3.59)**	**<0.001**

CD: Conduct Disorder; ODD: Oppositional Defiant Disorder; OCD: Obsessive Compulsive Disorder; ADHD: Attention deficit Hyperactivity Disorder; DMDD: Disruptive Mood Dysregulation Disorder; Stress Related Disorders: Acute stress reactions, posttraumatic stress disorder, and adjustment disorders. Bold represented statistically significant results. Bold represented $p < 0.1$ in univariable logistic regression analysis.

Table 5
Multivariable logistic regression analysis for predictors of multiple ED visits.

	Adj O.R. (95% C.I)	p
Gender (ref. Male)	1.17 (0.75–1.82)	.466
Age group	Ref	.138
Under 6 years old	0.105 (0.005–2.06)	.725
6–10 years old	1.48 (0.16–13.44)	.941
11–14 years old	1.08 (0.1217–9.67)	
15–18 years old		
Reasons **for** visits	0.89 (0.28–2.81)	.855
SITB	1.14 (0.35–3.71)	.827
Aggression/violence	1.18 (0.33–4.20)	.796
Somatic complaints	1.58 (0.41–6.13)	.503
Psychotic symptoms	0.51 (0.09–2.68)	.430
Substance abuse	0.39 (0.07–1.97)	.255
Mood symptoms	0.76 (0.11–4.99)	.783
Anxiety	0.70 (1.15–3.19)	.650
Motor system	0.25 (0.03–1.76)	.165
Forensic issues	Ref	
Other		
History of mental health contact	**2.55 (1.66–3.91)**	**<0.001**
Psychiatric Diagnoses		
CD/ODD	**3.95 (1.77–8.82)**	**.001**
ASD/MR	**2.98 (1.68–5.28)**	**<0.001**
Psychotic Disorders	**2.65 (1.34–5.25)**	**.005**
Bipolar Disorders	**3.39 (1.75–6.56)**	**<0.001**
Dissociative Disorders	**3.88 (1.21–12.46)**	**.023**
Tic Disorders	2.56 (0.62–10.59)	.192
Comorbidity	1.11 (0.66–1.87)	.679

CD: Conduct Disorder; ODD: Oppositional Defiant Disorder; OCD: Obsessive Compulsive Disorder; ADHD: Attention deficit Hyperactivity Disorder; DMDD: Disruptive Mood Dysregulation Disorder; Stress Related Disorders: Acute stress reactions, posttraumatic stress disorder, and adjustment disorders. Bold represented statistically significant results. Bold represented $p < 0.05$ in multivariable logistic regression analysis.

young people suffer from depression.

One of the most striking findings of our study is that approximately two-thirds of patients with serious psychiatric disorders, such as depression, psychosis, and substance use disorders, have no history of mental health admission. Previous studies confirmed that ED visits may be the first contact for many patients with severe psychiatric disorders and that ED use is more likely among children with poor economic circumstances (Chun et al., 2019; Mapelli et al., 2015; Gill et al., 2017). Therefore, our findings may also be related to the fact that our hospital's catchment area includes a population with low to moderate socioeconomic status and low awareness of and access to psychiatric services. As a result, the ED is considered a safety zone for screening, risk identification, and referral for treatment for mental health problems (Chun et al., 2019; Devylder et al., 2019).

Similar to previous studies (Sheridan et al., 2015; Grupp-Phelan et al., 2009), the completion time of consultation was quite long in our study. Due to limited hospitalization options in our province, it may be necessary to stay at ED until the psychiatric condition is stabilized. One of the reasons for the long length of stay at ED may be that many

patients have a need for investigations and medical assessments to rule out other medical conditions. Considering the long consultation process for patients with conditions such as SITB, forensic issues, and bipolar disorders, it can be said that differential diagnosis, management, and stabilization require a complicated process in these patients.

Our results showed that antipsychotics were the most frequently used in patients presented to the pediatric ED with psychiatric complaints. The choice of benzodiazepines was less common in our patient group than in similar studies (Kendrick et al., 2018). In our clinic, benzodiazepines are used with caution considering the risk of disinhibition, dependence, and adverse respiratory effects. Therefore, they are often preferred in patients who are closely monitored in our outpatient clinic. Limited information is available on the efficacy of psychiatric emergency intervention strategies in children and adolescents. Studies in this area will play a critical role in clinicians' treatment decisions.

Our study also concluded that the rate of multiple visits was lower than in similar studies (Newton et al., 2009; Mapelli et al., 2015). This rate may be related to our high rate of planning outpatient appointments which are usually made no later than 1 month after the index ED visit. Nonetheless, about half of the return visits occurred within the first month. This rate could be due to patients whose symptoms could not be controlled at the index visit. The results of our logistic regression analysis showed that history of mental health contact and having difficult-to-treat psychiatric disorders such as dissociative disorders, psychotic disorders, bipolar disorders, ASD/ID and CD/ODD were predictors of multiple ED visits. Considering that multiple ED visits indicate symptom management problems; they can be said to be a poor prognostic indicator. In the initial visit of patients with these disorders, treatment strategies aimed at rapid stabilization and the creation of contingency plans for crises with caregivers may both reduce the burden of emergencies and positively influence prognosis.

There are some limitations of our study. The first is limited to out of regular working hours only. Although this provides detailed information on child psychiatrists' night shifts, which is unusual, those who presented to the ED during regular work hours could influence our results. Second, the information is based on retrospective records; no scales for standardized measurements were used. Third, because of the difficulties in diagnosing psychiatric disorders (obtaining detailed information from caregivers, excluding other medical pathologies, school observations, etc.), the high number of patients who did not have a psychiatric diagnosis at the first visit to ED and who had a follow-up appointment for establishing psychiatric diagnosis may have an impact on the current diagnostic distribution. In addition, variables such as socioeconomic level and parental education level, which we were not able to measure in our study, could influence the frequency of return visits. Despite all these limitations, our study can be said to have high representativeness because it includes data from a single pediatric psychiatry referral center for a large population outside of regular work hours period.

As a result, children and adolescents do not have adequate access to mental health services for many serious psychiatric disorders, particularly depression, and urgent crises are the entry point to mental health care for many. In addition, treatment strategies for difficult-to-manage psychiatric disorders should include action plans for their urgent crisis, which is critical for both improving patient prognosis and reducing the service load of hospitals for a high resource-consuming group.

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Conflict of Interest

There is no conflict of interests.

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