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Mental Health Emergencies in Paediatric Services: Characteristics, Diagnostic Stability and Gender differences

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Introduction. Child and adolescent psychiatric emergencies have increased in recent years. The main objective of our study is to analyze sociodemographic and clinical characteristics of psychiatric emergencies under 18 years old that came to our hospital. Secondary objectives were to study diagnostic stability made in the emergency department and undertake a gender analysis.

Methods. Descriptive cross-sectional study of patients attending the pediatric emergency department who required consultation to psychiatry service during 2010 and 2011, comparing data with two previous cross-sectional cuts (2002-2003 and 2006-2007). Then we track the diagnoses assigned during a year. Statistical analysis was descriptive. We also include a gender analysis.

Results. We analyzed 328 episodes corresponding to 179 different patients (average age 14.48). We detected a progressive increase of prevalence of psychiatric emergencies from 2002 to 2011. Diagnostic distribution showed a significant association of Behavioral Disorders with males and an association of Self-injured Behaviors and Eating Disorders with females. The admission rate was 18.5%. One-year diagnostic outcomes showed differences comparing to emergency diagnosis.

Conclusions. Increase and complexity of psychiatric consultations in Pediatric Emergency Department requires a greater coordination and training of these services to enhance patients care. Emergency visit could mean the entrance of complex and severe patients to a specialized care. Our results detect gender differences: more Behavioral

Disorders, Psychosis and Substance Use Disorders in males and Self-Injury and Eating Behavior Disorders in females.

Keywords: Emergencies, Pediatrics, Psychiatry, Child Behavior Disorders, Suicide

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Urgencias Psiquiátricas en Pediatría: características, estabilidad diagnóstica y diferencias de género

Introducción. Existe una tendencia en los últimos años al aumento de las urgencias infanto-juveniles por motivos psiquiátricos. El objetivo principal del estudio fue analizar las características sociodemográficas y clínicas en las urgencias psiquiátricas de los menores de 18 años. Como objetivos secundarios, estudiamos la estabilidad diagnóstica y realizamos un análisis de género.

Metodología. Estudio transversal descriptivo de pacientes que consultaron entre 2010 y 2011 al servicio de urgencias pediátricas por motivos psiquiátricos. Comparamos con dos cortes previos (2002-2003 y 2006-2007) y realizamos un seguimiento al año de los diagnósticos asignados. Estadística descriptiva, incluyendo un análisis comparativo de género.

Resultados. Se analizaron 328 episodios (179 pacientes, edad media 14,48 años). Se detecta un incremento de prevalencia de 2002 a 2011. La distribución de diagnósticos por género muestra una asociación significativa de la alteración conductual con el masculino y de las conductas autolesivas y los trastornos alimentarios con el femenino. La tasa de ingreso fue del 18,5%. Tras revisar el diagnóstico al año de seguimiento, muestra diferencias con respecto a la orientación diagnóstica en urgencias.

Conclusiones. El incremento de las consultas psiquiátricas urgentes en pediatría requiere una mayor coordinación y formación de los servicios para mejorar y adaptarse a esta emergencia. La consulta urgente supone la puerta de entrada a la atención psiquiátrica especializada de pacien-

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tes complejos y graves. Existen diferencias de género relevantes: se observan más trastornos conductuales, psicosis y trastornos por uso de sustancias en el género masculino y más conductas autolesivas y trastornos alimentarios en el femenino.

Palabras clave: Urgencias, Pediatría, Psiquiatría, Trastornos de Conducta de la Infancia, Suicidio

INTRODUCTION

Emergency care is a nearby point of detection of the most prevalent and serious mental disorders and clinical debuts of mental disorders. In this context, there has been an increase in child and youth mental health emergencies during recent years¹⁻⁸.

The main reasons for psychiatric consultation in pediatric emergencies are diverse, and sample characteristics, admission rates⁴ and, in general, diagnostics are not very specific.

Crespo et al.⁹ conducted a descriptive study about psychiatric patient characteristics in pediatric emergencies at Gregorio Marañón Hospital, in Madrid. They analyzed 79 patients who consulted over a period of 6 months, showing a similar diagnostic distribution comparing to our study.

Another aspect that has been studied in child and youth patients that came to emergencies has been whether there was a connection between main complaints and patient gender. Kennedy et al.¹⁰ described an association between diagnosis and gender in child and youth patients; showing higher rates of depression and suicide attempts among females; while in the male group there were more behavior disorders and attention deficit hyperactivity disorder (ADHD).

In our hospital, Viaplana et al.¹¹ conducted an analysis of child and youth psychiatric emergencies (under 15 years) attended between 2002 and 2003 (57% women), with a mean age of 11.8 years. Our group (Argemí et al.¹²) published a new analysis of emergencies attended between 2006 and 2007, comparing the new data with the previous analysis. New results included 104 patients younger than 15 years with a mean age of 12.37 years. In this sample, the admission rate was 36%. The most common discharge diagnoses were Behavioral Disorder (52%), Anxiety Disorder (20.2%) and Suicide Attempts (12.5%).

Given the importance of the subject, and the trend to increased attendance of this group of patients, our goal was

to take a close look at this group of patients, doing a new temporary cut including more assessments. The main aim of our study was to analyze the sociodemographic, clinical and therapeutic plan of psychiatric emergencies under 18 years who came to our hospital between 2010 and 2011. As secondary objectives we carried out a gender analysis and evaluated diagnostic stability one year after the emergency visit.

METHODS

We performed a descriptive retrospective review of 179 patients under 18 years who visited the Emergency Pediatric Department of Corporació Sanitària i Universitària Parc Taulí de Sabadell (Barcelona) between January 2010 and December 2011 who required psychiatry evaluation. Given that some patients consulted our center in more than one occasion, we obtained a total of 328 episodes.

Our hospital provides coverage to a population of approximately 91.976 inhabitants under 18 years. All visits were previously assessed by a pediatrician who decided if child needed a psychiatric evaluation. Afterwards, depending on their condition, patients were discharged or were admitted to our child psychiatry unit or, if not beds available; they were provisionally referred to another Hospital. Patients who did not require admission, were referred to outpatient unit or to our Child and Youth Mental Health Day Clinic.

Patients with suicide attempts or self-injury behavior that did not require an inpatient treatment and possessed an adequate family support, followed a specific protocol with quick referral, being evaluated by our team in Child and Youth Mental Health Day Clinic the following day. This protocol allows a much more individualized monitoring, as the multidisciplinary intervention in the Day Clinic has a diagnostic and therapeutic intensity very similar to full-time hospitalization.

In our study socio-demographic and clinical variables and diagnostic stability in follow-up were collected. Also, we analyzed the characteristics of patients who required hospitalization.

The variables taken into account included age, gender, reason for consultation, discharge diagnosis and previous treatment (if appropriate), personal and family psychiatric history, need of medication of physical constriction and discharge referral. Afterwards results were compared with previous analysis performed by our team (2002-2003 and 2006 to 2007^{11,12}). Finally, we conducted a gender analysis of the main diagnoses.

To analyze the diagnostic stability of patients we compared the diagnoses in the Emergency Service with diagno-

ses made by Children and Youth Mental Health team at 1 year follow up.

Regarding the statistical analysis, the variables are described using means and medians in quantitative and qualitative ratios. Relationships have been established with the Chi-square test for qualitative variables and using ANOVA for quantitative variables. Statistical analysis was performed using SPSS version 19.

RESULTS

Sociodemographic characteristics of the sample are described in Table 1. In this sample, the attendance was similar regarding gender, with a mean age of 14.48 years, range 5–17, SD: 2.63. The vast majority of patients who consulted had known psychiatric history (78.8%) and in 21% also had family psychiatric history. 63.1% of patients were already linked to the Child and Youth Mental Health outpatient unit and were taking psychiatric treatment (48.6%). On-third of the patients admitted drug consumption, although it should be noted that data about drug consumption should be carefully interpreted, since systematic analytical determination of drug consumption was not performed in all patients, and they do not used to talk about it unless you ask them specifically.

Most of them came only once in these two years of study, but there were 32.9% who came twice or more and 6.8% went to emergency 5 or more times.

The main reason for emergency consultation of these patients was an Aggressive Behavior (42%). We specify in Table 2 if it was an episode of aggression against other people, against objects or a verbal type. The second most frequent reason for consultation was the Self-injury Behavior (22.8%), differentiating between suicide attempts, self-harm injury and suicide ideation. Less frequent reasons for consultation were anxiety symptoms (14.6%) and psychotic ideation (5.1%).

The average length of stay in the emergency room was 2 hours. Only 18.9% were referred by a health professional, the others came on its own. 12.2% required ambulance transport.

During the stay in the emergency room 21.1% required medication (66 cases). Of these, in 26 cases an antipsychotic (olanzapine, haloperidol, risperidone or quetiapine) was administered and in 23 patients a Benzodiazepine was prescribed. In 26.8% of patients attended in Emergency Departments medication plan was changed or a new medication was introduced. A small percentage of cases required physical restraint (8.2%).

Table 1	Sociodemographic and clinical characteristics of the sample (N=179)
	N (%)
Gender: male	91 (51%)
Age (mean)	14.48
Personal Psychiatric History	141 (78.8%)
Family Psychiatric History	38 (21%)
Previously linked to the Child and Youth Mental Health outpatient unit	97 (63.1%)
Taking drug treatment before emergency consultation:	87 (48.6%)
– Methylphenidate and Atomoxetine	29 (16.2%)
– Antidepressants	21 (11.7%)
– Antipsychotics (Risperidone, Quetiapine, Olanzapine)	17 (9.6%)
– Others	20 (11.1%)
Drug misuse:	
– Alcohol	23 (13%)
– Tobacco	19 (10%)
– Cannabis	40 (22%)
– Cocaine	3 (2%)
Frequentation:	
– 1 visit	108 (60.3%)
– 2–4 visits (high frequency user)	59 (32.9%)
– 5 visits or more (ultra high frequency user)	12 (6.8%)
From a childcare home / accompanied by parents	25 (14%) / 154 (86%)
Presence of language barrier	10 (5%)

Gender diagnostic distribution (Figure 1) shows an association of aggressive behavior in males (52.4% of male visits were made for an aggressive behavior, whereas in girl's case only in 30.2% of cases). Regarding self-injury behavior in females represented 29.1% of its total group and in men only 7.2%. Likewise, Eating Disorders predominate in women (13% of female visits and only 0.6% of male). All of them with significant differences ($p<0.001$) (Figure 1).

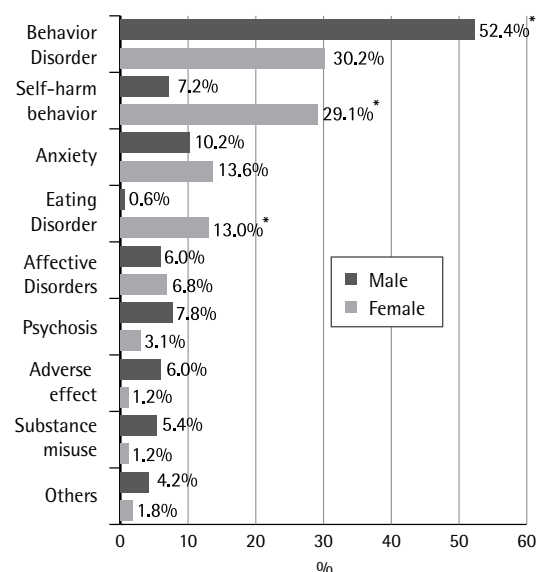
The admission rate in our sample was 18.5%. Diagnoses that required admission in a higher proportion of cases were psychotic patients (11/18; 61.1%) and the ones with an Eating Disorder (13/22; 59%) (Figure 2). Regarding to self-injury behavior, it highlights a low admission rate compared to other studies (9/59; 15.2%), probably because of the suicide attempts program and our quick referral to Child and Youth

Table 2	Reasons for consultation (N=328)	
	N	%
Aggressive Behavior	138	42.0%
- Heteroaggressivity against other people	45	13.7%
- Heteroaggressivity against objects	25	7.6%
- Verbal heteroaggressivity	5	1.5%
- Unspecified aggressive behaviour	63	19.2%
Self-injury Behavior	75	22.8%
- Suicide attempt	30	9.1%
- Self-Harm injury	28	8.5%
- Suicide ideation	17	5.2%
Anxiety	48	14.6%
Psychotic ideation	17	5.1%
Worsening of underlying disorder	14	4.3%
Anorexy	10	3.0%
Treatment side effect	10	3.0%
Depression	7	2.1%
Insomnia	6	1.8%
Others	2	0.6%

Mental Health Day Clinic. An intensive approach to these high-risk cases is done, avoiding in most cases hospitalization. A big volume of emergency room visits were motivated by an aggressive behavior that can be attended in the emergency room without requiring admission (admission rate of 17 of 136 consultations; 12.5%), discarding a serious mental illness that could cause that episode and could be discharged.

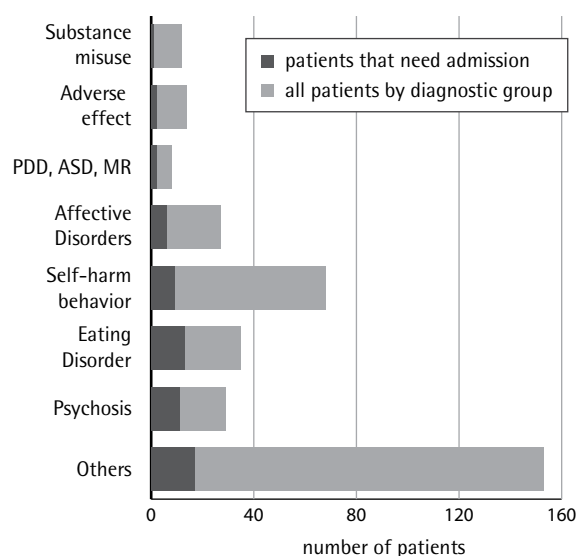
Diagnostic distribution changes according to age groups. We observed an increase of aggressive and self-injury behavior in proportion to age. The prevalence of anxiety disorders and eating disorder was higher in 13 to 15 years group (Table 3).

We reviewed patient's diagnosis seen in the emergency department a year later and picked what was the diagnosis of the outpatient psychiatrist who was seeing him. Most cases were still receiving the Behavior Disorder diagnosis (28.5%), but the percentage was much lower than in emergencies; Affective Disorders in 16.2%, ADHD in 14.6% of



* Significance <0.001.

Figure 1 Gender differences and clinical diagnosis in Emergency Department (N=328)



PDD: Pervasive Developmental Disorder; ASD: Autism Spectrum Disorder; MR: Mental retardation.

Figure 2 Distribution of hospital admissions according to the different diagnostic groups (N=328)

cases, Eating Disorder in 11.1%, Autism Spectrum Disorder (ASD) and Mental Retardation (MR) 11.1% (Table 4).

Table 3	Discharge diagnosis and mean age (N=238), ANOVA	
	N	Mean age
Aggressive behavior	136	14.57
Anxiety	39	14
Self-harm behavior	59	16
Treatment side effect	12	11
Psychosis	18	15.57
Urgent pathology is discarded	1	16.76
Eating Disorder	22	15
ADHD	3	9.14
ASD, PDD, MR	6	12
Affective disorders	21	16
Substance misuse	11	16

ADHD: Attention Deficit Hyperactivity Disorder; ASD: Autism Spectrum Disorder; PDD: Pervasive Developmental Disorder; MR: Mental retardation.

Table 4	Evolutive diagnosis at 1 year follow-up (N=179)	
	N (%)	
Behavioral Disorders	51	(28.5%)
Affective Disorders	29	(16.2%)
Attention Deficit Hyperactivity Disorder	26	(14.6%)
Eating Disorders	20	(11.1%)
Autism Spectrum Disorder, Mental Retardation	20	(11.1%)
Anxiety Disorders	17	(9.5%)
Psychotic Disorders	11	(6.2%)
Others	5	(2.8%)

Patients diagnosed with aggressive behavior in emergencies, 1 year later; 14.6% were diagnosed with ADHD, 5.1% had a mood disorder and 3.7% Intermittent Explosive Disorder; as most significant diagnoses.

One year follow up of suicide attempts was very variable. 22.2% were diagnosed with an unspecified behavior

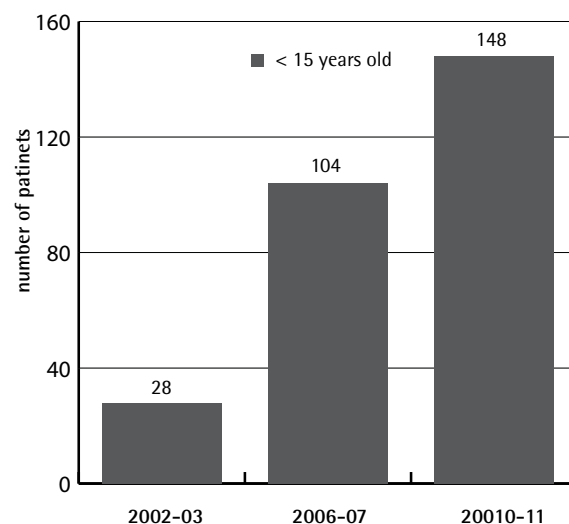


Figure 3 Evolution of child and youth psychiatric emergencies in three consecutive analysis periods

disorder, while 18.5% were diagnosed with adaptive disorder or Borderline Personality Disorder in 18.5% (in older than 15 years cases), 14.8% of Anorexia Nervosa and 7.4% of Major Depression.

Compared with the previous studies analyzing child and youth psychiatric visits, we observed a progressive increase of patients attended, from 28 patients in 2002-2003 to 148 in 2010-2011 (Figure 3). One important factor to consider analyzing the evolution is that until 2009 we only considered "child and youth emergency" patients with 15 years or younger, thereafter pediatric emergencies were attended until 18 years, so we present disaggregated data in these two age groups to be more easily interpretable.

DISCUSSION

Emergency department assistance is an important "gateway" to specialized mental health care. Up to 37% of patients who consulted in our emergency department were not being visited in the mental health outpatient department and emergency visit allowed the diagnosis of potentially serious pathologies.

The admission rate in our sample was 18.5%. Diagnoses that required admission to a higher proportion of cases were patients diagnosed with Psychosis and Eating Disorder. This data is differential with the results of American studies, where the percentage of admission after a suicide attempt reaches 56.1%¹³, and also different from the hospitalization

rate of 32.35% found by Crespo et al.⁹. Our results are different, which may indicate a differential clinical care approach, greater use of community care resources, mainly the Day Clinic. Also should be kept in mind that our reference area has a very low rate of psychiatric hospital beds for this population (4/91,000 inhabitants).

Olfson et al.¹³ included a prediction model of hospital admission after a suicide attempt in his area, detecting an interaction between psychiatric diagnosis and prescription of psychotropic medication as independent risk factors. A Canadian group (Bethell et al.¹⁴) studied the relationship between suicidal behavior and depression in adolescents, both frequent reasons for consultation in the emergency room. The coexistence of both diagnoses has implications for suicide prevention, which emphasizes the importance of diagnosing and treating adolescents with depression and may be a good place for case detection.

Moreover, a recent systematic review on the management of suicide attempts in pediatric emergency services (Newton et al. 2010¹⁵) shows how interventions including proactive monitoring strategies and community approaches achieve high rates of effectiveness. Patients receiving home nurse care after the attempt achieve higher adherence rates than patients who were discharged only with the appointment for an outpatient visit. Brief interventions in the emergency department have also been proven effective, reducing the suicide risk and the admission rate.

The follow-up one year after of suicide attempts in our sample, shows a low ratio of major affective disorders. Our interpretation is that either we have an insufficient sample or the suicide attempts in adolescence do not use to be associated with major affective pathology, but may also be reactive to a relational trouble, or a period of unstable mood that, in its evolution, would not be diagnosed as a major affective disorder.

In our sample, up to a fifth of consultations received pharmacological treatment during their stay. Olfson et al.¹³ found that in 6.2% of visits patients were medicated with anxiolytics. Kennedy et al.¹⁰ described that up to 60% of the sample had a brief psychological intervention, medication or both.

Patients needed physical restraint in 27 visits during these 2 years of study (8.2%). There are not many studies on the need of physical restraints measures in child and youth with emerging pathology. Grupp-Phelan et al.⁴ described the need of physical or pharmacological restraint in 5% of cases, varying in different study centers between 3% and 9%. In our previous analysis (2006 and 2007) during their stay in emergencies, only 4.8% of patients required physical restraints¹².

Bell et al.¹⁷ made a study about patient characteristics that needed to be attended in emergencies. The authors an-

alyzed emergency room visits for children under 18 years at the Austin Hospital (Australia) in 2006, 254 cases were analyzed, 70.1% were women. Substance misuse (SM) accounted for 44 (17.3%), 128 (49.21%) were related to mental health problems (MH), and 82 (33.5%) were considered mental health problems with comorbid substance misuse (CO). They divided the sample into 3 groups: those who came by consuming toxic (T), which was attended by another mental pathology (PM) and dual patients (D: drug consumption and mental illness). In the first group (SM) there was a similar percentage of males (M) and females (F) (M:47.1%/ F:52.9%). However, in the MH the vast majority were females (M:27%/F:73%) as well as in the CO group (M:15%/F:85%). The predominance of females in CO group could guide to possible additional risk in adolescents women with dual diagnosis.

Olfson et al.¹³ also provides a gender analysis from a sample from a US hospital between 1997 and 2002, including patients from 7-24 years old. Males show an overall ratio of 189.5 visits per 100.000 population, while women show a significantly higher ratio (263.0). There is a difference not statistically significant of a higher rate of hospital admission after a suicidal attempt in women (63.3%), compared to 48.4% in men ($p=0.06$).

Crespo et al.⁹ also shows a clear predominance of males in Behavior Disorder (67.85%) and Anxiety Disorder (71.42%) and suicide attempts (79.92%) in females. Length of stay in the emergency room was 2 hours, whereas in the Liu et al.¹⁶ study was greater (5 hours and 33 minutes), similar to the one founded in the Grupp-Phelan et al.⁴ sample, that was 5.1 hours. Comparing the average stay of mental health emergency visits with other medical consultations, it is clear that the psychiatric ones tend to have a longer duration (169 minutes versus 108 minutes).

Psychiatric visits were more likely to arrive by ambulance (21.8% versus 6.3%) and to be finally admitted (16.4% versus 7.6%) (Case et al.¹⁸). Regarding the length of stay predictors, an American group conducted a retrospective study with patients between 3 and 17 years attending two emergency services with a psychiatric diagnosis between 2010 and 2012. They differentiated between the concepts of length of stay (LOS) and prolonged LOS (PLOS). They included 239 patients with an average LOS of 295 minutes. The diagnosis was the most powerful predictor of LOS and PLOS. Patients with a psychotic disorder and suicidal behavior experienced greater LOS and PLOS (odds ratio 3.07 and 8.36 respectively). Gender and previous history of suicidal behavior were associated with increased LOS and PLOS (Chakravarthy et al.¹⁹).

LOS and its associated costs can be reduced using appropriate strategies. Mahajan et al.²⁰ showed how the LOS

of pediatric patients who needed care for mental health problems was significantly higher than the rest of pediatric emergency visits ($p=0.001$). However, after implementing a specific orientation (Child Guidance Model), LOS and its associated costs significantly reduced.

Rogers et al.²¹ in Connecticut (USA) also shows how the use of other specific management program (Child & Adolescent Rapid Emergency Stabilization - CARES Program) could reduce not only LOS, but also the associated economic costs. However, the program fails to reduce the number of psychiatric emergencies in pediatrics. Moreover, the use of specific programs, some of them taken from experiences in adult populations, as well as increased training of pediatric professionals could positively influence, as evidenced by a recent systematic review (Hamm et al.²²).

As previously mentioned, training of future pediatrics specialists should include key aspects of addressing mental health problems in childhood and specifically on the management of crisis situations in emergencies. There are few data on the characteristics of this training internationally. A study by Santucci et al.²³, in the United States, shows the lack of psychiatric training of pediatric residents. In our state, child psychiatry is included as an optional rotation during the last year of training and has an appropriate list of educational objectives (BOE²⁴). However, we do not know the use of this option by pediatric residents.

Regarding to substance misuse, a Spanish study collected the characteristics of these visits. Velasco et al.²⁵ recruited patients who came between 2007 and 2008 to the hospital emergency and made a systematic urine analysis to test substance misuse: 13.5% tested positive for cannabis. Emergency visits usually are motivated because of multiple drug consumption. Substance misuse is one of the main complaints that have produced a greater increase in admissions to emergency in recent years (Sanjurjo et al.²⁶). García-Algar et al.²⁷ emphasizes in the different symptoms and ways of detecting cannabis intoxication presentations in emergencies. In our sample there is a significant percentage of drug abuse, even at early ages and with multiple drug consumption, supporting the need to take into account this issue.

Regarding drug misuse, particularly alcohol, Cunningham et al.²⁸ described that brief psychological interventions can be useful in emergencies. It is an American study that selected patients aged between 14 to 20 years, who tested positive to a screening of risk drinkers ($n=1054$), randomizing them ($n=836$) to: brief intervention (BI) with a computer, therapist BI or control. After 3 months follow-up, they were randomized to a BI session or control. Regression models showed that both the therapist and computer BIs reduced consumption at 3 months.

Dolan et al.⁵ published a review, and the Pediatric Emergency Committee of America highlighted different aspects which should be taken into account in the management and detection of cases of mental health in pediatric emergencies. They emphasize the importance of conducting fast screenings in emergencies to detect suicidal risk and depression. Pícazo-Zappino²⁹ described the main risk factors for suicidal behavior in adolescents: depression, hopelessness, dysfunctional families, substance abuse, school failure and harassment. In this sense, there has recently launched a program in Catalunya: "Suicide Risk Code" that allows the identification and detailed monitoring of adolescent patients (and adults) with risk of suicide to make a continuous orientation attention³⁰.

Finally, Scivoletto et al.³¹ made an interesting review of emergencies in child and youth psychiatry, emphasizing its relevance for the early detection of the first manifestations of a psychiatric disorder, as well as the need for diagnostic evaluation and presence of a suitable support by the family environment. Chun et al.³² highlights the challenge of the growing need to attend psychiatric patients in pediatrics.

All these recommendations are interesting for our environment. We emphasize the recommendation of a greater knowledge of the characteristics of psychiatric emergencies in pediatrics for a better adaptation of resources and infrastructure; as well as the training of future pediatric specialists in aspects of child and adolescent psychiatry, regarding the characteristics and management of the most common diseases.

Limitations of our study include the retrospective design and the use of syndromic diagnoses in emergencies not always stuck to standardized classification criteria. Other limitations are the difficulties of comparing results taking into account the different health systems (and diagnostic systems) as well as various social and educational approaches. Among the main strengths are: the sample size, to have a prospective follow-up in our outpatient clinic for the vast majority of cases because we represent the only center of reference for child and youth in our area, allowing to have data with only a few missings in the follow-up.

CONCLUSIONS

A significant increase in the number and complexity of psychiatric consultations attended in the Emergency Department is observed, so that more and better coordination and training is most needed between Psychiatry and Pediatrics services to improve the care offered to our patients. Noteworthy, Emergency Room can be a gateway to specialized psychiatric care for complex patients.

Diagnostic stability is relatively low, tending to move from syndromic diagnoses in the emergency room to stan-

dardized in follow up, especially in the group that was presented in the emergency with a diagnosis of Aggressive Behavior. Also, there are gender differences in child and youth consultations: males showed more Behavioral Disorders, Psychosis and Substance Use Disorders, while females showed more Self-injury Behaviors and Eating Disorders.

CONFLICT OF INTERESTS

The authors declare no conflict of interest.

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