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ORIGINAL CONTRIBUTION

Hospital admissions in adolescents with mental disorders in Spain over the last two decades: a mental health crisis?

Vicente Soriano[1] · José Manuel Ramos[2] · María Inés López-Ibor[1,3] · Carlos Chiclana-Actis[1,4] · Manuel Faraco[1,5] · Joaquín González-Cabrera[1] · Eduardo González-Fraile[1] · Gemma Mestre-Bach[1] · Héctor Pinargote[6] · Manuel Corpas[1,7] · Lucía Gallego[1,3] · Octavio Corral[1] · Hilario Blasco-Fontecilla[1,8]

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Abstract

Mental disorders account for a large and increasing health burden worldwide. Characterizing the spectrum of mental disorders and trends over time in adolescents should influence education policies and support preventative strategies at schools. Retrospective study of all hospitalizations in Spain in adolescents 11–18-years old, including mental disorders as diagnosis using the Spanish National Registry of Hospital Discharges. Information was retrieved from 2000 to 2021. During the 22-year study period there were 2,015,589 hospitalizations in adolescents in Spain, of which 118,609 (5.9%) had mental disorders. The rate of psychiatric diagnoses significantly increased from 3.9% in 2000 to 9.5% in 2021. Females accounted for 55.1% of admissions. Mean age at admission declined from 17 to 15 years-old from 2000 to 2021. Mean hospital stay was 10.6 days. Mean in-hospital mortality was 0.24%. By rate order, diagnoses were: substance use disorders (SUD) (40%) > eating disorders (15%) > anxiety/posttraumatic stress disorder (PTSD) (13%) > attention deficit hyperactivity disorder (ADHD) (9%) > major depression (8%) > schizophrenia/psychosis (6%) > autism spectrum disorder (ASD) (6%) > sleep disorder (3%) > suicidal behavior (2%) > sexual disorders (1%). A significant gender dichotomy was noticed, with female predominance for internalizing disorders (i.e., anxiety, depression, suicidal behavior and eating disorders) whereas externalizing disorders (i.e., SUD, ADHD, ASD, schizophrenia and other psychoses) predominated in males. Suicidal behavior and male sex were independent predictors of in-hospital death in multivariate analysis. After the first year of the COVID-19 pandemic, hospitalizations due to mental disorders in adolescents increased by 51% in 2021. There is a growing crisis of mental health among adolescents in Spain. Although the COVID-19 pandemic has unveiled the high rate and severity of psychiatric disorders among youth, a steadily increase has occurred since the beginning of the millennium. Primary preventative strategies should be adapted to distinct and more prevalent mental disorders in adolescents.

Keywords Mental disorders · Adolescents · Psychiatric disorders · Suicide · Depression · Addiction

✉ Vicente Soriano
vicente.soriano@unir.net

1 UNIR-Itei & Health Sciences School, Universidad Internacional de La Rioja, C/ Zurbano 73, 28010 Madrid, Spain

2 School of Medicine, Universidad Miguel Hernández, Alicante, Spain

3 Universidad Complutense, Madrid, Spain

4 Consulta Dr. Carlos Chiclana, Madrid, Spain

5 Centro Adalmed, Madrid, Spain

6 Dr. Balmis University General Hospital, Alicante, Spain

7 Westminster University, London, UK

8 Center of Biomedical Network Research on Mental Health (CIBERSAM), Madrid, Spain

Introduction

There is an unprecedented crisis of mental health in children and adolescents in developed countries [1–6]. Although the COVID-19 pandemic has unveiled a high rate and severity of mental disorders in the youth, the problem comes from years before. More worrisome, it appears to be getting worse, according to data from the US Centers for Diseases Control (CDC) [7]. As example, suicide has become the leading cause of death in young people since year 2020, ahead of cancers, traffic accidents and congenital diseases [8–11].

Adolescents with mental disorders occasionally require hospitalization. Although literature is scarce about the rate of admissions due to mental disorders, a recent US study

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has alerted about an increased demand since the outbreak of COVID-19 pandemic. [12, 13]

Globally, nearly 9% of children and adolescents are diagnosed with mental disorders, which represents a large burden of disease on public health [2, 3, 6]. During the last decades, the growing rates of anxiety disorders, major depression, eating disorders, addiction behaviors, sexual disorders, and suicide attempts have brought unprecedented challenges to public health systems [12]. An increasing number of experts are asking to set up urgently preventative interventions. [4]

The Global Burden of Disease (GBD) Study 2019 provides internationally comparable information on trends in the health status of populations and changes in the leading causes of disease burden over time [11]. In a recent publication, mental disorders, substance use disorders (SUD), and self-harm were estimated for young people aged 10–24 years in 31 European countries. [3] In 2019, rates were 17% for mental disorders, 4% for SUD, and 0.1% for self-harm. Over 30 years, eating disorders and SUD increased, although overall the greatest burden resulted from anxiety, depression, and behavior disorders.

The same study concluded that mental health conditions in Europe represented a major health burden for young people in the period 1990–2019 (before COVID-19), both in terms of disability and premature deaths. Given that these conditions often predict the persistence of same or worse mental disorders in adulthood, and since the estimated direct and indirect costs of these disorders are higher than those of chronic somatic diseases, the study emphasized the need for policies to strengthen mental health in future years, with a specific focus on young people. [3]

Herein, we characterize the rate and spectrum of mental disorders as well as trends over time in all adolescents hospitalized in Spain during the last two decades. Our main objective was to estimate changes in the rate of hospitalizations over time for distinct mental disorders among adolescents in Spain from 2000 to 2021. This knowledge should provide insightful information to guide education policies and support preventative strategies at schools.

Methods

Study design

All data were collected retrospectively from population-based hospital discharge diagnoses. They were recorded at the minimum basic data set (MBDS) of the Spanish National Registry of Hospital Discharges (SNRHD). This administrative database includes information from all patients discharged at hospitals/clinics in Spain since the 90s [14]. This large source of information has been used for multiple purposes, including planning and distribution of budgets, as well as burden and trends over time for distinct medical conditions. Briefly, primary diagnosis at hospital discharge records along with main demographics and health variables are recorded at hospitals from both the public and private health systems. Very valuable information has been produced for several infectious diseases, such as HIV, viral hepatitis and COVID-19, as well as cardiovascular illnesses. [15–20]

It should be noted that the Spanish health system provides universal coverage for hospitalization, including admissions for non-permanent migrants. Therefore, biases due to difficulties in access to care should be negligible. The disruption caused by COVID-19 since 2020 was unprecedented and accordingly we decided to address it separately.

Our analyses were conducted with all data included at the SNRHD from 1st January 2000 to 31st December 2021, covering 22 years. Diseases and procedures were defined according to the International Classification of Diseases-updated nineth revision until 2015. Since then, we used the tenth revision (ICD-10-CDM).

We selected hospital admissions for patients with the ICD-9 and ICD-10 diagnostic codes recorded at the Supplementary Table 1. Briefly, a list of 19 distinct mental disorders were checked in all hospital discharges. All diagnoses were considered regardless of their position in the diagnostic list for each episode of hospital admission. We further examined hospital outcome variables, including length of hospitalization and in-hospital mortality.

Statistical analyses

Figures are given as absolute numbers and percentages. Quantitative and qualitative variables are described as mean ± standard deviation (SD) or median plus interquartile ranges (IQR), or as proportions. The significance of differences between two independent proportions was calculated using the Z-ratio. Bivariate comparisons of quantitative and qualitative variables were performed using the U Mann–Whitney test, Pearson's chi [2] test or Fisher's test. The examination of time trends was performed using the Kruskal–Wallis test for quantitative and the chi [2] test for qualitative variables.

The predictors of in-hospital mortality were examined using univariate and multivariate analyses. The measure of association is presented as odds ratio (OR) with 95% confidence intervals (95% CI). Variables included in the univariate analysis were older age, male sex, and all distinct mental disorders. Parameters with p values < 0.05 in univariate analyses were entered into a multivariable logistic regression using a forward stepwise selection method with the likelihood-ratio test. The significance in the multivariable model was reported as adjusted odds ratio (aOR). The model's validity was evaluated using the Hosmer–Lemeshow test for

estimating fit goodness to the data. All statistical analyses were performed using the IBM SPSS package for Windows v25.0 (IBM Corp, Armonk, NY). All tests were two-tailed, and only p values < 0.05 were considered as significant.

Ethical aspects

The database was provided by the Spanish Ministry of Health upon request. All potential patient's identifiers were removed in advance. Patient's informed consent was not needed for this analysis, according to the Spanish laws. The study was approved by the Clinical Research Ethics Committee of the Universidad Internacional de La Rioja (UNIR) (ref. PI-022/2023; 4/27/2023). All procedures were carried out following ethical standards recorded at the revised Declaration of Helsinki, 2013. The database has been named as SPAIN-HOSPI-PSYCHO-YOUTH and could be shared upon request.

Results

During the 22 years study period, a total of 2,015,589 adolescents aged 11–18 years-old were hospitalized in Spain. At least one mental disorder was diagnosed in 118,609 (5.9%) of them. The overall number of hospitalizations in adolescents declined during the study period; however, those admitted with mental disorders increased. They represented 3.9% in year 2000 and increased to 9.5% by year 2021 (Fig. 1). In absolute numbers, figures were 4,233 admissions in year 2000 and rose to 7,964 in year 2021. They steadily increased during the whole study period but during the 2020 year because of the COVID-19 pandemic. Of note, a marked increase in both absolute number and percentage of admissions was noticed in year 2021 compared to year 2020, when COVID-19 drastically reduced hospital admissions.

Significant increases in hospitalizations were seen for most psychiatric diagnoses. More than tenfold increase in admissions in adolescents with mental disorders was noticed for some conditions, such as attention deficit hyperactivity disorder (ADHD), depression and sexual disorders (Fig. 2). Taken together, there was a striking increase in hospitalizations due to 'internalizing' disorders (major depressive disorder and anxiety disorders) and neurodevelopmental disorders (ADHD and ASD).

Median age at hospitalization with mental disorders in the study population of adolescents was 16 years (IQR, 14–17). However, as shown in Fig. 3, admissions were significantly higher in older adolescents within this young range. On the other hand, median age at hospitalization significantly declined during the 22-year study period, with a first sharp decrease in 2010, and later on since 2015 (Fig. 4).

The rate of distinct mental disorders in the study population is recorded in Table 1. By order, the five most frequent diagnoses were: SUD (cannabis, opioids, stimulants, cocaine, hallucinogens, alcohol) (40%), anorexia nervosa (13%), intellectual disability (10%), ADHD (9%) and depression (8%).

Globally, adolescent girls with mental conditions were admitted more frequently than boys (55.1% vs 44.9%; p < 0.001). However, as shown in Table 1, a subset of mental disorders was more frequent in boys than girls, including ADHD, ASD, bipolar disorders, manic episodes, schizophrenia and other psychosis.

The mean hospital length due to mental disorders was of 10.6 ± 0.2 days. However, there were significant

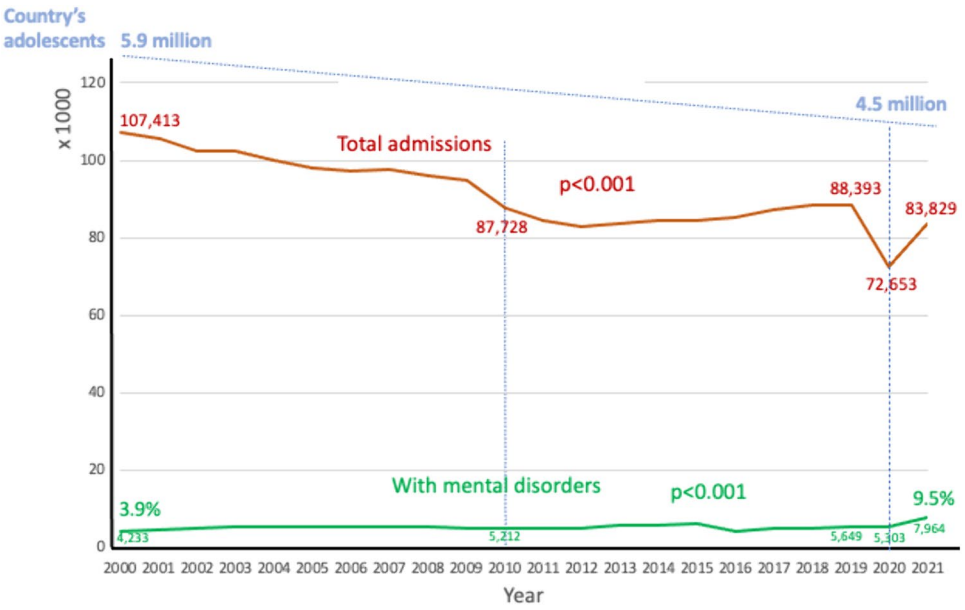

Fig. 1 Hospitalizations in adolescents by year in Spain

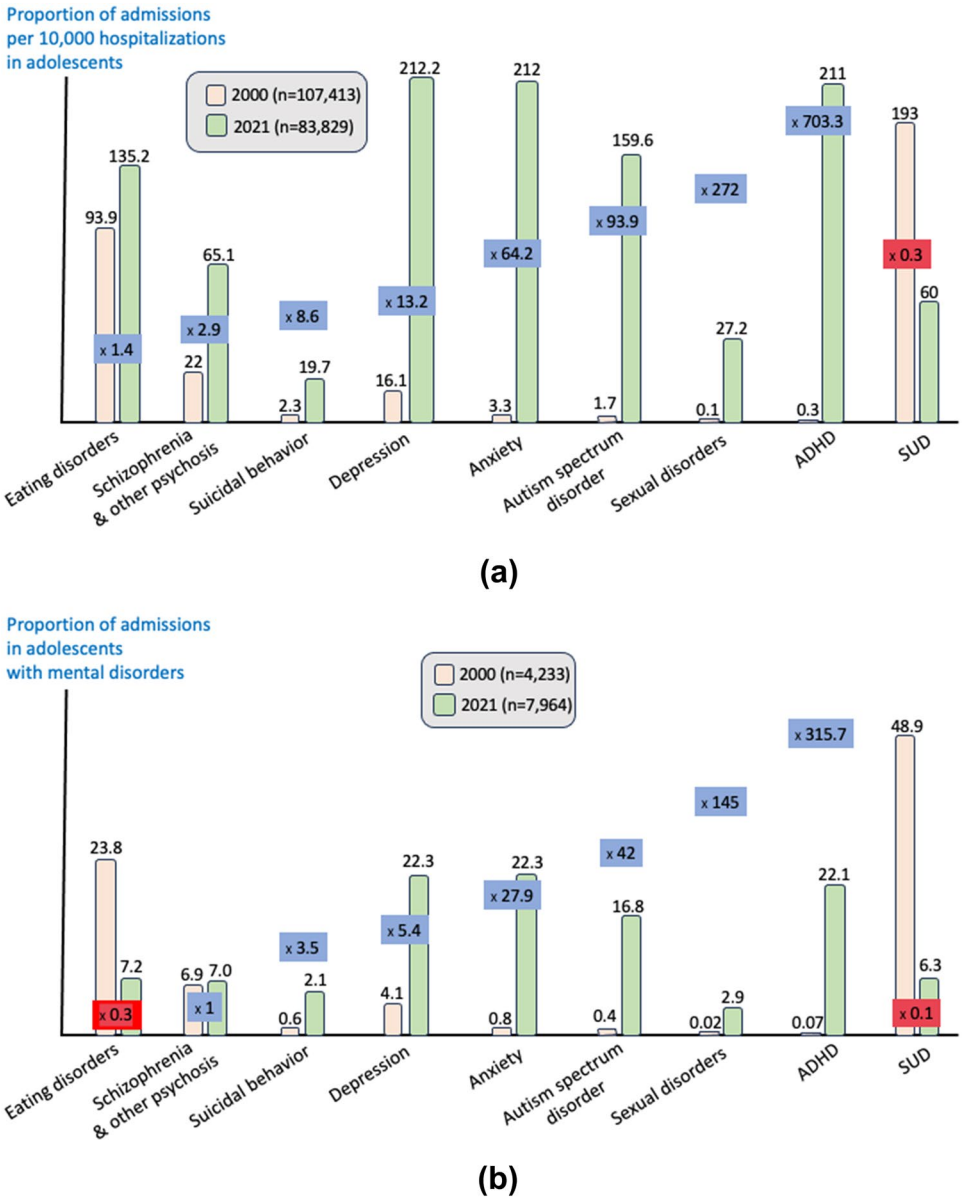

Fig. 2 Trends in hospitalizations over time for distinct mental disorders in adolescents in Spain. **a** Taking as reference all admissions in adolescents. **b** Taking as reference only admissions in adolescents with mental disorders

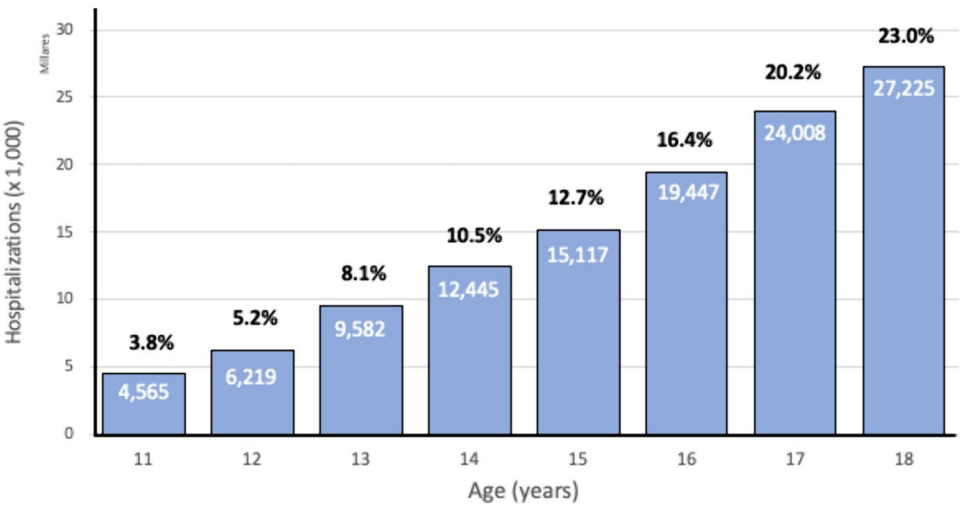

Fig. 3 Hospitalizations in adolescents with mental disorders in Spain by age

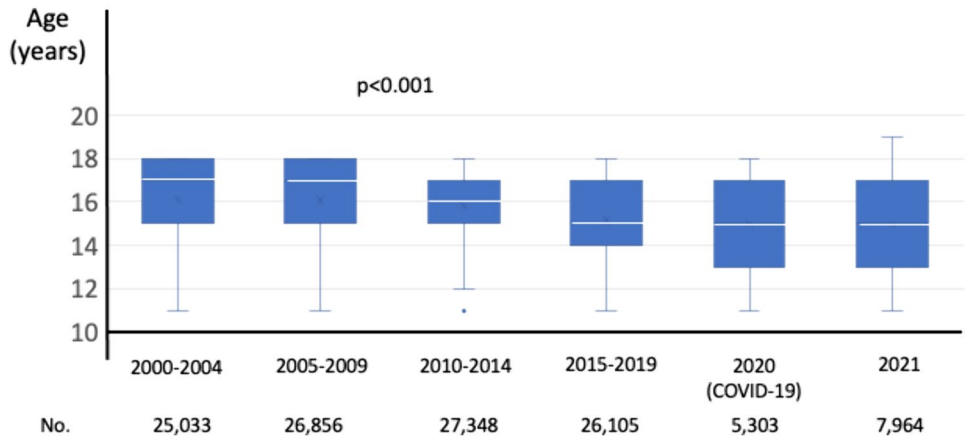

Fig. 4 Median age at hospitalization in adolescents with mental disorders during the study period

Table 1 Stratification of mental disorders in adolescents hospitalized in Spain by sex

	Diagnosis	Hospitalizations	Rate (%)	Male (%)	Female (%)	p
1	Substance use disorders (others than alcohol)	44,933	37.9	53.7	46.3	< 0.0001
2	Anorexia nervosa	15,338	12.9	10.0	90.0	< 0.0001
3	Intelectual disability	11,640	9.8	58.9	41.1	< 0.0001
4	Attention deficit hyperactivity disorder	10,292	8.7	72.6	27.4	< 0.0001
5	Major depressive disorder	9881	8.3	25.7	74.3	< 0.0001
6	Other mood disorders	9822	8.3	38.5	61.5	< 0.0001
7	Postraumatic stress disorder	8562	7.2	33.7	66.3	< 0.0001
8	Anxiety	7503	6.3	27.2	72.8	< 0.0001
9	Autism spectrum disorder	6659	5.6	74.4	25.6	< 0.0001
10	Schizophrenia	5024	4.2	67′4	32.6	< 0.0001
11	Sleep–wake disorders	3830	3.2	58.1	41.9	< 0.0001
12	Bulimia nervosa	2946	2.5	8.9	91.1	< 0.0001
13	Suicidal behavior	2855	2.4	26.6	73.4	< 0.0001
14	Other psychosis	2201	1.9	58.3	41.7	< 0.0001
15	Bipolar disorders	2022	1.7	52.3	47.7	< 0.0001
16	Alcohol use disorder	1402	1.2	69.8	30.2	< 0.0001
17	Manic episode	1102	0.9	62.7	37.3	< 0.0001
18	Sexual disorders	658	0.5	36.9	63.1	< 0.0001
19	Behavioral disorders	365	0.3	52.3	47.7	0.004

differences when comparing distinct mental conditions, as shown in Table 2. The longest stays were recorded for schizophrenia and anorexia nervosa whereas the shortest admissions were for adolescents with sleep–wake disorders and anxiety.

The overall in-hospital mortality in adolescents admitted with mental disorders was 0.24%. As expected, there were significant differences between death rates comparing distinct mental conditions (Table 2). The highest in-hospital mortality rates were seen among adolescents admitted with intellectual disability, suicidal behavior, and autism spectrum disorder (ASD) whereas the lowest rates were seen in adolescents hospitalized with psychosis, schizophrenia or post-traumatic stress disorder (PTSD).

The predictors of in-hospital mortality were examined adjusting for age, sex, and distinct mental disorders (Table 3). In multivariate analysis, boys had greater mortality than girls, as well as adolescents admitted with suicidal behavior and intellectual disability.

Discussion

In this nationwide retrospective study, we unveiled important changes in the pattern of hospitalizations in adolescents in Spain since 2000. First, the overall number of hospitalizations in adolescents has declined significantly (about 23%); in contrast, the proportion of adolescents admitted with

Table 2 Mean hospital length and in-hospital mortality by diagnosis

	Mental disorder	Hospitalizations	Mean stage (days)	± SD	N	%
1	Substance use disorders (others than alcohol)	44,933	7.3	0.05	106	0.24
2	Anorexia nervosa	15,338	22.7	0.2	23	0.15
3	Intelectual disability	11,640	8.5	0.13	72	0.62
4	Attention deficit hyperactive disorder	10,292	7.2	0.15	11	0.11
5	Major depressive disorder	9881	11.9	0.17	18	0.18
6	Other mood disorders	9822	14.5	0.16	5	0.05
7	Postraumatic stress disorder	8562	10.7	0.16	1	0.01
8	Anxiety	7503	7.7	0.14	12	0.16
9	Autism spectrum syndrome	6659	9.8	0.22	22	0.33
10	Schizophrenia	5024	24.1	2.16	2	0.04
11	Sleep–wake disorders	3830	4.7	0.18	9	0.24
12	Bulimia nervosa	2946	13.4	0.28	2	0.07
13	Suicidal behavior	2855	10.6	0.28	12	0.42
14	Other psychosis	2201	16.2	0.46	1	0.04
15	Bipolar disorder	2022	17.8	0.42	2	0.10
16	Alcohol use disorder	1402	7.3	0.6	8	0.57
17	Manic episode	1102	17.8	0.46	1	0.09
18	Sexual disorders	658	8.1	0.45	1	0.15
19	Behavioral disorders	365	13.3	1.28	0	0
	Total	118,609	10.6	0.2	280	0.24

Table 3 Predictors of in-hospital mortality in adolescents with mental disorders hospitalized in Spain

	Deaths (total = 280)	Multivariate aOR (95% CI)**	p
Older age	–	1.055 (0.992–1.122)	0.087
Male sex	172 (61.4%)	1.839 (1.426–2.372)	< 0.001
Mental disorder			
Intelectual disability	72 (25.7%)	2.812 (2.114–3.740)	< 0.001
Suicidal behavior	12 (4.3%)	2.574 (1.431–4.628)	0.002
Alcohol use disorder	8 (2.9%)	1.982 (0.972–4.041)	0.06
Anorexia nervosa	23 (8.2%)	0.830 (0.526–1.308)	0.421
ADHD*	11 (3.9%)	0.362 (0.196–0.668)	0.001
Mood disorders	5 (1.8%)	0.257 (0.106–0.625)	0.003
Schizophrenia	2 (0.7%)	0.125 (0.031–0.502)	0.003
Postraumatic stress disorder	1 (0.3%)	0.060 (0.008–0.425)	0.005

**ADHD,* attention deficit hyperactivity disorder

**Multivariate analysis adjusted for age, sex and diagnosis

mental disorders has risen by 2.5-fold, representing nowadays nearly 10% of admissions. Second, admissions per 10,000 hospitalizations in adolescents were mostly due to eating disorders and schizophrenia/other psychoses in 2000, whereas in 2021 were due to anxiety, mood (depression), and neurodevelopmental disorders (ADHD and ASD). On top of that, SUD and anorexia nervosa accounted for more than half of all hospitalizations in adolescents with mental disorders. Third, the median age at hospitalization during the study period worrisomely decreased, with pronounced declines after 2010 and 2015. Fourth, the risk for psychiatric admissions was higher in females, with a distinct profile of diagnoses compared to males. Fifth, most hospitalizations for mental disorders in adolescents were attributable to two single mental disorders: SUD, particularly in males, and anorexia nervosa, almost exclusively in females. However, there is a trend for increased admissions for anxiety, depression, neurodevelopmental disorders (ADHD and ASD), sexual disorders, and suicidal behavior. Finally, adolescents hospitalized with intellectual disability, ASD,

suicidal behavior, or alcohol use disorder had higher probability of death during hospitalization. Altogether, our data strongly suggest that Spain is facing an adolescent mental health crisis similar to that seen at other Western societies [21–23], being particularly more pronounced during and after the COVID-19 pandemic.

In our study among adolescents hospitalized in Spain, the rate of hospitalizations for mental disorders increased from 3.9% in 2000 to 9.5% in 2021. Our data are in keeping with the large and growing prevalence and burden of mental disorders in adolescents worldwide [2]. A recent German study stressed the marked increase in admissions of adolescents with mental disorders in 2021 compared to 2020. The effects were most severe among younger adolescents, and boys. The authors suggested that "prolonged school closures led to a substantial deterioration in youth health-related quality of life, precipitating early signs of mental health problems." They concluded that school closures largely explained the deterioration of youth mental health [24]. Another study carried out in US and France also found a trend for increased hospitalizations due to mental disorders after the COVID-19 pandemic [23]. One might be tempted to blame the pandemic for the mental health crisis plaguing our young people. The reality, however, is that the pandemic has simply been the straw that broke the camel's back. Indeed, child and adolescent mental health has been recently declared a national emergency in the US. [25]

Another interesting finding is related to specific mental disorders. Overall, SUD and eating disorders accounted for 55% of all admissions. This is somewhat in contrast with literature, in the sense that most research on adolescent hospitalization for mental disorders point out to depression and other mood disorders as the major source of hospitalization [26]. Indeed, we reported a clear-cut change in trends in hospitalizations over time for distinct mental disorders in adolescents in Spain. In 2021, the four leading mental disorders were, by order, major depressive disorders, anxiety disorders, ADHD, and ASD. In a recent retrospective, multisite (8 hospitals in the US and France) cohort study of adolescents aged between 11 and 17 hospitalized with at least 1 mental health disorder between February 1, 2019, and April 30, 2021, the authors reported that: 1) the pandemic increased adolescent hospitalizations with mental disorders; and 2) there was an increase of anxiety, depression, and self-injury, quite similar to our findings. [23]

The authors of the study discussed above also stressed that the adolescent girls were more likely hospitalized than boys (61.5%), and this difference was more pronounced in the aftermath of the pandemic (girls accounted for 68.5% of all psychiatric admissions). In our study, overall, girls accounted for 55% of hospitalizations with mental disorders in Spain. This finding agrees with information from other countries, such as the United States [27]. Interestingly, a sexual dichotomy was recognized, being girls more frequently than boys admitted with 'internalizing' conditions, such as affective disorders, suicide attempts and eating disorders. In contrast, boys were more frequently hospitalized with mental disorders recognized as 'externalizing', such ADHS, ASD, and SUD. Similar observations have been found by others. [28]

Furthermore, the mean age of psychiatric hospitalization in our study was 15.7 years-old, similarly to that seen in other studies [23]. More worrisome is the trend for a younger mean age of psychiatric hospitalizations in adolescents admitted during recent years. We can only speculate about the reasons behind this finding. The sociological and technological changes (e.g., emerging role of social media, websites, changes in family values and support, etc.) may have negatively impact on learning of children and adolescents [29], who currently are more fragile and less capable to confront contingencies.

The mean hospital length was above 10 days. In a recent study conducted in the United States [30], the average length of stay for adolescents with mental conditions ranged from 8 to 10.3 days, very similar to our data, which is surprising considering the large differences between the American and Spanish health systems. In another study with data coming from eight US and French centers, the median duration of hospitalization was 7 days [23]. The longest admission stays in adolescents with mental disorders were for anorexia and schizophrenia in girls and boys, respectively. Mean hospitalization lengths above three weeks were noticed for adolescents with any of these two conditions. This information is relevant for parents/tutors that would accompany these adolescents during their hospitalization and may ask for job leave. Furthermore, these long stays might challenge some hospitals with shortage of acute beds and should plan patient's referral to other health care facilities adapted for accommodating longer stays. On the other hand, short stays have been associated with an increased risk of subsequent negative outcomes after premature discharge [31], reflecting inadequate care in the face of administrative health pressure for patient's hospital leaving. [30]

The overall in-hospital mortality rate was 0.24% for adolescents admitted with mental disorders. This rate is significantly lower than the one reported in the United States, which is largely driven by the high rate of firearm injuries in this young population [32]. In our study, in-hospital mortality was greater for adolescents admitted with intellectual disability, ASD, alcohol use disorder, and suicidal behavior, although only intellectual disability and suicidal behavior remained statistically significant in the multivariate analyses. Both ASD and intellectual disability have been associated with increased in-hospital mortality by others [33, 34]. Furthermore, the literature is clear on the risk that suicidal behavior poses for suicide completion [35]. Although the

specific cause of in-hospital mortality was not specified, we should expect that suicide completion was a major contributor in this group. Closer attention to this population might be needed to prevent and manage more adequately fatality attempts. Moreover, regardless which mental disorders were considered, overall boys had significantly greater in-hospital mortality than girls.

Hospitalizations in adolescents with behavioral and sexual disorders were noticed only in recent years. They have been associated with identity problems. There is increasing evidence supporting that new online technologies and internet applications such as videogames or social media may strongly influence the neurodevelopment of children and adolescents. The growing impact of social networks and other means of access of information over the internet have replaced traditional face-to-face learning experiences. This seems to influence distinct personality and behavioral traits, where immediacy and easy access is the rule. As result, there is an increasing perception of rising difficulties in processing of information and proper development of executive and emotional functions at a critical maturation age. [36]

While digital technology has enabled exponential development in many areas of life (social, educational, health, leisure, etc.), it has opened the door to new risks, such as cyberbullying, sexting, online grooming, online abuse, etc. In addition, other risks related to inappropriate use of the Internet include nomophobia, gambling or pornography [37–42]. Efforts to ensure proper use of the internet are particularly needed for those born after the year 2000, the so-called Z and alpha generations. This subset of youth is particularly vulnerable, since it is the first that grew-up with digital technology.

Limitations

We should acknowledge several limitations of our study. First, the figures reflect hospital admissions over 20 years; but they do not reflect the frequency of disorders, especially for less severe cases. Thus, our numbers may be just the tip of the iceberg with respect to the burden of mental disease among adolescents in Spain. Second, disparities due to change in coding diagnostic assignment occurred after 2015, when ICD-10 replaced ICD-9. Third, some conditions were poorly characterized from the clinical standpoint and will require further improvements. This is the case for substance and behavioral addictions as well as for sexual disorders. In this regard, analysis performed using the SNOMED coding system might provide better insights for these conditions. Fourth, our study did not explore the association of multiple psychiatric diagnoses (mental pluripathology). Larger bioinformatic expertise and tools will be needed for such analysis.

Other caveats derived from the study design. First, our retrospective analysis did not provide us the opportunity to check clinical charts and clarify more accurately any doubtful information. Second, we could not check whether a patient had been hospitalized within the same calendar year at different clinics. Therefore, admissions could have been slightly overestimated. Third, recording of mental disorders in the hospital discharge report might have occurred accompanying any other medical condition, that was the major reason for admission. In future studies, we plan to use more convenient bioinformatic tools to analyze trends for mental disorder pluridiagnoses. In studies previously conducted using the SNRHD database for other medical diagnoses, such as HIV, hepatitis B, COVID-19, etc. the large population size ameliorated much of such potential biases, since sensitivity analyses fit well with distinct approaches [15–20]. Based on these considerations, we consider that the SNRHD is a source of valuable information, providing data reliable enough that covering over 98% of hospital admissions in Spain. The accuracy of the register is guaranteed by periodic audits. Hence, the information discussed in our study should be considered representative of the clinical burden and time trends of global and distinct mental disorders among adolescents hospitalized in Spain.

A final consideration for the proper interpretation of our findings refers to the main characteristics of the Spanish health system. Briefly, overall 70% of medical visits are made at the public health system. This rate has been declining during the last two decades, as private medicine is steadily increasing. Medical care for psychiatric conditions is performed at first by general practitioners, in psychiatric outclinics or at emergency departments. Hospitalizations are produced based on hospital bed availability, severity of the condition (i.e., suicide risk or violence for relatives, etc.) and social needs (i.e., people living alone, lack of family support, etc.). Hospitalization for some mental disorders, as example eating disorders (either anorexia or bulimia) tend to be programmed days-weeks in advance. In contrast, admissions for other psychiatric conditions, as example acute major depression or postraumatic stress episodes, are made as emergency or high priority.

Conclusions

This large nationwide retrospective study of hospitalizations in adolescents in Spain has shown that mental disorders have significantly increased during the last two decades. Girls account for 55% of admissions, with predominance of eating disorders, depression and anxiety. Furthermore, hospitalizations among adolescents with mental disorder occur at younger age. There is a rising trend for anxiety and depressive disorders, neurodevelopmental disorders (ADHD and ASD), sexual disorders, and suicidal behavior. Similarly to other developed countries, Spain is facing a mental health

crisis that began in 2000 but speeded up in the last 15 years. Recent societal and technological changes could largely account for the current adolescent mental health crisis. Primary prevention strategies in schools should be undertaken and adapted to the new profile of mental disorders in adolescents.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s00787-024-02543-2.

Author contributions VS and JMR designed the study. VS, JMR and HP dis the statistical analyses and first interpretation of results. VS, JMR and HBF wrote the first draft. HBF, CC-C, JGC, EGF, GMB, MC and OC reviewed the consecutive drafts and added comments. All authors saw and approved the final submission.

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Data availability No datasets were generated or analysed during the current study.

Declarations

Conflict of interest The authors declare no competing interests.

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