



Research report

Hospitalization trends in Spanish children and adolescents with eating disorders (1998–2007)

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ARTICLE INFO

Article history:

Received 3 February 2010

Received in revised form 18 May 2010

Accepted 19 May 2010

Keywords:

Eating disorders

Children

Adolescents

Hospitalizations

Spain

ABSTRACT

The study describes and analyzes the hospitalizations due to eating disorders (EDs) among children and adolescents during 1998–2007 in Spain. We conducted a retrospective study of national hospitalization data using the Minimum Basic Data Set. Hospitalization rates were calculated for EDs among children and adolescents aged 10–18 years. Length of hospital stay (median), psychiatric comorbidities, medical conditions and mortality rates were analyzed. There were a total of 10,569 EDs admissions during the period of study. The median length of hospital stay was greater in patients with anorexia than in those with bulimia (14 vs. 9 days). The most common psychiatric comorbidity was mood disorders. The estimated incidence due to anorexia did not change significantly over the period of study. We provide clinical profile about Spanish children and adolescents who are hospitalized with EDs.

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Introduction

Eating disorders (EDs) are unique among psychiatric illnesses, because patients experience both physical and psychological disturbances (Wiseman, Sunday, Klapper, Harris, & Halmi, 2001), thus making them an important health problem (Rome et al., 2003).

Dieting behaviours in children and adolescents are widespread and impact on the prevalence of EDs. Each year in the United States, 5 million people are diagnosed with EDs and hospitalization may be required for accompanying medical complications (Schwartz, Mansbach, Marion, Katzman, & Forman, 2008). Epidemiological data indicate that, in western countries. Similarly, the prevalence of anorexia nervosa stands at around 0.3–0.4% in young women; the prevalence rate for bulimia nervosa is around 1% for young women and 0.1% for young men (Bulik et al., 2006; Hoek & van Hoeken, 2003; Julián, Peláez, Ramírez, & de la Puente, 2002; Kjelsas, Bjornstrom, & Gotestam, 2004; Kohn & Golden, 2001; Olesti Baiges et al., 2008; Pérez-Gaspar et al., 2000).

While epidemiologic data can enable us to estimate the prevalence of EDs, results are often contradictory due to the lack

of a standard methodology. Information is available from hospitalization records, although only the most severe cases are highlighted (Gucciardi, Celasun, Ahmad, & Stewart, 2004).

The US Agency for Healthcare Research and Quality has published national estimates of hospitalizations for EDs from 1999–2000 to 2005–2006. ED-related hospital stays increased between 1999 and 2006 in all age groups, with the greatest increase in children aged under 12 years (Zhao & Encinosa, 2009). Other authors have estimated that one-third of individuals diagnosed with EDs will be hospitalized during their illness (Calderon, Stoep, Collet, Garrison, & Toth, 2007).

The fact that these patients may be more malnourished means that they could experience more severe cardiac, metabolic, and neurologic complications (Steinhausen, 2009). One cohort study indicated that psychiatric morbidity is an important predictor of EDs (Patton, Selzer, Coffey, Carlin, & Wolfe, 1999). Other studies have found that, in just under a third of adolescent patients with EDs, the condition persisted in young adulthood (Lewinsohn, Seeley, Moerk, & Striegel-Moore, 2002; Patton, Coffey, & Sawyer, 2003).

In Spain, studies using questionnaires, report the clinical characteristics of patients hospitalized due to EDs (Fernández-Aranda et al., 2007; Rodríguez Martín, Novalvos Ruiz, Martínez Nieto, Escobar Jimenez, & Castro de Haro, 2005). However, few studies have examined hospitalization rates in children and adolescents. The authors of a study involving 352 children and adolescents hospitalized with eating disorders in the State of New York found that the mean length of stay was 18 days, with a mean cost per stay of \$10,019, and that length of stay was not

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influenced by age group, sex, or ethnicity (Robergeau, Joseph, & Silber, 2006).

More information is necessary on hospitalization trends in patients with EDs. We describe and analyze the characteristics of hospital admissions due to EDs among children and adolescents during the period 1998–2007 in Spain.

Methods

Data source

This study was carried using the Minimum Basic Data Set (MBDS) as the data source. The MBDS is a national hospital admissions database containing discharge data abstracted for at least 95% of all acute care hospitalizations in Spain. It is managed by the Spanish Ministry of Health and Social Policy (Instituto Nacional de Gestión Sanitaria, 2001) and includes the following data: hospital details; patient's name, date of birth, sex, place of residence, and date of admission; surgical and obstetric procedures; other procedures; and date and type of discharge. Diagnoses are assigned using the International Classification of Diseases-Ninth Revision, Clinical Modification (ICD-9-CM); all inpatients in the MBDS database had a primary diagnosis and up to 14 diagnoses coded at discharge.

Patients

We included children and adolescents aged 10–18 years of both sexes, with discharge dates between January 1, 1998 and December 31, 2007. The study patients had an ICD-9-CM diagnosis of anorexia (307.1) or bulimia (307.51) coded as the primary or secondary diagnosis (in any of its 14 sections) at discharge.

We have excluded admissions codified as 'eating disorders not otherwise specified' (EDNOS) (ICD-9-CM, 307.50) because only 18 admissions had this diagnostic discharge.

Demographic and clinical characteristics

Pediatric hospital admission with EDs was characterized by age and sex. The clinical characteristics included specific EDs and psychiatric and medical comorbidities. Psychiatric comorbidities were classified into mutually exclusive groups based on the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) as follows: mood disorders, personality disorders, anxiety disorders, adjustment disorders, impulse control disorders, dissociative disorders, and substance abuse without dependence.

Associated medical conditions were classified into mutually exclusive groups based on ICD-9-CM as nutritional deficiencies, diabetes, cardiac dysrhythmia, and asthma.

The characteristics of the hospital stay included incident cases of hospitalization, length of hospital stay, and mortality rate.

Statistical analyses

A descriptive statistical analysis was performed for all the continuous variables and categories of the study participants by stratifying according to anorexia nervosa or bulimia nervosa.

We calculated the annual hospital admissions due to anorexia nervosa and bulimia nervosa in children and adolescents by age group and sex using the Spanish National Statistics Institute census projections from the year 2001 (Instituto Nacional de Estadística, 2009).

To assess trends in rates of hospital admissions during the period 1998–2007, the adjusted incidence rate ratios (IRRs) were calculated using multivariate Poisson regression models. We performed these analyses separately for patients with anorexia nervosa and patients with bulimia nervosa. The independent variables included in these models were year of hospitalization, sex, age group, and psychiatric or medical comorbidity.

The median hospital length of stay (days) in patients with EDs was calculated overall and by age group.

Estimates were made using the "svy" (survey commands) function of the STATA program, which enabled us to incorporate the sampling design and weights into all our statistical calculations. Statistical significance was set at $p < 0.05$ (two-tailed).

Results

A total of 10,569 EDs admissions to Spanish hospitals were recorded in the MBDS during the 10-year study period. The median age was 16 years (range, 10.5–18.9 years), and 6.6% were male. Only 11 admissions with EDs (0.1%) died during their stay. Table 1 shows the characteristics of hospital admission rates according to discharge diagnosis.

Anorexia was the principal discharge diagnosis for 86.8% of admissions with EDs, for the remainder it was bulimia nervosa. Median age for anorexia admission was 15 years and 47.6% of admissions were aged over 15 years. In bulimia median age was 16 and 48.4% were aged over 16 years.

During the study period, the median hospital stay was greater in those patients admitted for anorexia than in those admitted for bulimia (14 vs. 9 days).

Table 2 shows the principal comorbid psychiatric and medical disorders presented by admissions with EDs. In admissions with EDs, the most common psychiatric comorbidity was mood disorders (7.6% of admissions) and personality disorder (6.8%), followed by substance abuse (4.5%), and anxiety (4.2%). Secondary medical complications of EDs including nutritional deficiencies (6.3%) and cardiac dysrhythmia (1.1%). Comorbid medical disorders were less common: 1.5% had a diagnosis of asthma and 1.4% had a diagnosis of diabetes.

The psychiatric disorders diagnosed in admissions with anorexia were (in decreasing order of frequency) mood disorders, personality disorders, and substance abuse. In admissions with

Table 1
Demographic characteristics of pediatric admissions due to eating disorders in Spain (1998–2007) according to the Minimum Basic Data Set.

	Total admissions N = 10,569	Anorexia N = 9184	Bulimia N = 1385
Sex, no. (%)			
Male	698 (6.6)	638 (6.9)	60 (4.3)
Female	9871 (93.4)	8546 (93.1)	1325 (95.7)
Age (median, range)	16 (10.5–18.9)	15 (10.5–18.9)	16 (10.5–18.9)
Age group: 10–12 years, no. (%)	743 (7.0)	721 (7.8)	22 (1.6)
Age group: 13–15 years, no. (%)	4465 (42.2)	4088 (44.5)	377 (27.2)
Age group: 16–18 years, no. (%)	5361 (50.8)	4375 (47.6)	986 (71.2)
Length of stay (median, range) days	13 (2–125)	14 (2–125)	9 (2–76)
Mortality rate (%)	11 (0.1)	11 (0.1)	0 (0.0)

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