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ORIGINAL ARTICLE

Eating behavior disorders in patients hospitalized in a Mental Health Service

Trastornos de la alimentación en pacientes hospitalizados en un Servicio de Salud Mental Pediátrico

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Abstract

Eating disorders (ED) have a high prevalence during adolescence, associated with high morbidity and mortality. In our country, there are no data that characterize adolescent inpatients with ED. **Objective:** To describe and analyze hospitalizations of children and adolescents due to ED admitted in a Pediatric Mental Health Service (PMHS). **Patients and Method:** Data were collected from the clinical record of patients with ED hospitalized in the PMHS of the Hospital Roberto del Río during 2005–2015. The following admission variables were studied: cause for hospitalization, ED type, nutritional status, systemic involvement, and psychosocial variables (psychiatric comorbidities, family functioning, abuse, and suicide ideation/attempt). The t-Student test was used for quantitative variables and the chi-square or Fisher Test for qualitative variables for the comparison between groups. **Results:** 93 patients were included, with an average age of 14.6 years, 84% of them were women. The most frequent diagnosis was anorexia nervosa (AN) (71%) and the most frequent cause for hospitalization was the failure of outpatient treatment, followed by suicide ideation/attempt. At admission, 40% of the patients had malnutrition, 96% psychiatric comorbidity, and 88% family dysfunction. **Conclusion:** AN was the most frequent ED among inpatients and the failure of outpatient treatment was the main cause for hospitalization. The latter could be explained, in part, by the high prevalence of family dysfunction and psychiatric comorbidity of patients and their families which would complicate outpatient treatment.

Keywords:
Eeating disorders; anorexia nervosa; adolescent inpatients; family functioning

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Introduction

Eating disorders (ED) are a group of complex and difficult-to-treat psychiatric illnesses[1,2]. The DSM-5 recognizes seven diagnostic categories: anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorders (BED), unspecified feeding or eating disorders (UFED), pica, rumination disorder, and avoidant restrictive food intake disorder[3].

The international prevalence of ED is estimated at 0.5-1% of the general population. 85% of patients develop the disease between the ages of 13 and 20, with a maximum incidence between the ages of 14 and 16[4,5], and it is more frequent in women than in men (ratio 11:1)[6,7]. However, in recent years there has been a change in the profile of these patients, the frequency of men with this pathology has increased and now the ratio is 5:1 and includes adolescents of different socioeconomic levels, not just the high one[8,9].

The importance of these pathologies lies in the fact that they present significant associated morbidity and mortality, whose prognosis improves with early diagnosis and timely treatment. AN has a mortality rate of around 5.1% and one-third of this is due to suicide, followed by metabolic disorders and infections[10]. BN has a mortality rate lower than 3%, with a complication rate similar to that observed in AN[11].

Therefore, sometimes outpatient treatment is not enough and hospitalization is required for its management. The main causes of hospitalization due to ED are failure of outpatient treatment and malnutrition. However, depression and suicidal ideation have increased as reasons for hospitalized management of these pathologies[12].

The U.S. Agency for Healthcare Research and Quality published the national estimate of hospitalizations due to ED between 1999-2000 and 2005-2006 and noted that they have increased in all age groups, with the highest increase in children under 12 years of age[13]. Other authors have estimated that a third of patients with this diagnosis will be hospitalized during their illness[14].

In Chile, we do not have enough information on patients with ED who have required hospitalization, which of these disorders causes more hospitalized, what are the causes of these hospitalizations, and the characteristics of these individuals (comorbidities, family situation, abuse, etc.). This study analyzes the characteristics of inpatients in a pediatric mental health center in Santiago.

Patients and Methods

Participants

All patients under 18 years of age hospitalized in the Mental Health Service (MHS) of the Roberto del Rio Hospital with an ED diagnosis, such as AN (both restrictive and purging type), BN, BED, and Eating Disorder Not Otherwise Specified (EDNOS), between 2005 and 2015 were studied. Patients, with these diagnoses, were extracted from discharge statistical records. The MHS uses the international statistical classification of diseases and health-related problems (CID-10) to code diagnoses. A third-year pediatric fellow collected the data.

For clinical diagnosis, the MHS uses the DSM-5 since 2013 and the DSM-IV before that. The diagnosis process was carried out through an integral evaluation by the team (psychiatrist, psychologist, adolescentologist, occupational therapist, and social worker), seeking concomitantly the presence or not of psychiatric comorbidity. In addition, personality development and family functioning are evaluated, and then the patient is referred to other specialties (nutrition, cardiology, etc.). A personalized treatment plan is made that focuses on the patient and his or her needs (individual psychotherapy, psychotropic drugs, occupational therapy), and his/her family (family-based treatment, especially with the mother figure).

Patients with genetic disorders, congenital heart disease, and kidney failure were excluded.

Nutritional Parameters

Weight and height were recorded at the hospital admission and discharge. According to WHO/FAO tables (15), a body mass index (BMI) between -0.99 and +0.99 SD were considered normal weight, malnutrition BMI ≤ -2 SD, at risk of malnutrition BMI between -1 and -1.99 SD, obesity ≥ +2SD, and overweight between +1 SD and +1.99 SD for age.

Other variables

The alteration of vital signs was considered for systemic repercussion determination. Hypotension was defined as systolic and/or diastolic blood pressure under the 5th percentile for height according to the American Heart Association (AHA) tables[16]. Tachycardia was defined as a heart rate higher than 100 beats per minute (bpm) and bradycardia lower than 60 bpm.

A history of sexual abuse, suicidal ideation/attempt, prior hospitalization, and concomitant psychiatric pathology were obtained from the psychiatric record.

Outpatient treatment failure was defined as any patient who continues to lose weight despite outpatient follow-up independent of the number of visits, that one with active suicidal ideation, depression or another psychiatric comorbidity without response to outpatient treatment, vomiting persistence, and family dysfunction that traps the treatment.

Family dysfunction was defined as a family without awareness of illness and ED risks; a family that does

not comply with mental health and/or nutritional indications; a mother as "accomplice" to her child's ED.

Ethical Aspects

The protocol of this investigation was reviewed and approved by the Ethics Committee of the Northern Metropolitan Health Service and the internal committee of the Roberto del Rio Hospital.

Statistical analysis

An exploratory data analysis was performed, looking for anomalous, poorly coded or duplicate data. Results were expressed as mean and standard deviation (SD) or median and range according to the distribution of each quantitative variable evaluated graphically with Kernel density estimation and Shapiro-Wilks test. The variables were analyzed by dividing the data according to the type of ED (AN vs non-AN), and the patients with AN in those with and without depression. The Student's t-test was used to compare groups and the chi-square or Fisher test was used to study associations between categorical variables. A $p < 0.05$ value was considered significant. Statistical analyses were performed in the STATA SE 11.2 software.

Results

Between 2005 and 2015, 95 patients with ED diagnosis were hospitalized at the MHS of the Roberto del Río Hospital, and the clinical record of 93 patients (97.8%) was obtained.

Most of the patients were women (84%), with a female to male ratio of 5.2:1; the median age at the diagnosis was 14.1 years (8-17.5 years) and at the admission was 14.6 years (8.1-17.6 years).

AN was the main admission diagnosis, with 71% of cases, followed by BN with 18%, and finally UFED with 11%. The most common reason for hospitalization was failure of outpatient treatment followed by suicidal ideation (Table 1).

At the admission, 47% of patients were eutrophic, and 40% were nutritionally deficient (23.7% were at risk of malnutrition and 17.3% were malnourished) (Table 1). Upon discharge, improvement in nutritional status was observed, but there was an increase in the number of overweight patients from 8.7% (8 patients) to 12.6% (11 patients) (Figure 1).

In terms of vital signs, 12% (11 patients) had bradycardia and 17% (16 patients) had low blood pressure.

Ninety-six percent of the patients had at least one psychiatric pathology as comorbidity. Among them, the most frequent diagnosis was personality disorder with 41% (38 patients), followed by depression with 30% (28 patients) (Table 1).

In the psychosocial factors analysis, the high prevalence of family dysfunction stands out (88%), followed by family psychiatric pathology (56%), suicidal ideation (33%), and sexual abuse/rape (20%). Gender dysphoria was detected in seven patients (6 men and 1 woman) of which six had AN. Of the total number of patients, 17 had previously hospitalized due to ED (18.3%) and of these 13 had AN (Table 1).

When evaluating the 2005-2010 and 2010-2015 time periods separately, no differences were in the number of patients hospitalized due to these pathologies (49 vs. 44 adolescents). There were only significant differences in the admission diagnostic, although the failure of outpatient treatment was the most common reason for both periods, in the second period there was an increase in hospitalizations due to suicidal ideation/attempt and vital risk.

When comparing patients with AN (66) with those with other ED (27), a significantly higher proportion of women was observed in non-AN ED (96% vs 79%). A significant difference was also found in admission diagnostic and nutritional status. In patients with AN the main cause of hospitalization was the failure of ambulatory treatment while in the other ED was suicidal ideation/attempt. In addition, patients with AN had worse nutritional status and lower frequency of rape and abuse history (Table 1).

When analyzing within the group of patients with AN, it was observed that those with concomitant depression had significantly more suicidal ideation/attempt (42.1 vs 12.8 $p < 0.02$), and those with AN and personality disorder had greater family dysfunction (100% vs 76% $p < 0.01$).

Discussion

In this series, AN was the main admission diagnosis among the ED; the failure of outpatient treatment was the main reason for hospitalization, according to multiple publications[14,17]. Suicide ideation/attempt took second place, which is one of the main risks of these pathologies. International studies show that patients with ED are 18.1 times more likely to die by suicide than patients without ED[18,19]. In addition, it has been described that the number of suicide attempts is related to the longer duration of the illness[20].

The suicidal ideation/attempt was greater in non-AN ED, a phenomenon already described in international publications, where it has been observed that patients with BN, for example, have 2.1 times more suicidal ideation/attempt than patients with AN[21]. It is proposed that these events are more frequent in patients with purgative rather than restrictive behaviors and in those individuals with borderline personality

Table 1. Characteristics of the patients studied and comparison between those with anorexia nervosa and other eating disorders (ED)

Variable	Total (n = 93)	Anorexia (n = 66)	Other ED (n = 27)	p -value
Sex F/M(%)	78 (84) / 15 (16)	52 (78.8) / 14 (21.2)	26 (96.3) / 1(3.7)	0.04*
Admission age	14.6 (8.1-17.6)	14.6 (11.2-17.5)	14.6 (8.1-17.6)	0.3***
Diagnostic age	14.1 (8-17.5)	14.1 (8-17.5)	13.98 (8.1-17.1)	0.2***
Admission diagnostic (%)				0.01**
- Failure of outpatient treatment	45 (48.4)	37 (56.1)	8 (29.6)	
- Suicidal ideation/attempt	20 (21.5)	9 (13.6)	11 (40.7)	
- Mortality risk	10 (10.8)	8 (12.1)	2 (7.4)	
- Family disfunction	1 (1.1)	0 (0)	1 (3.7)	
- Others	17 (18.2)	12 (18.2)	5 (18.5)	
Nutritional status (%)				0.0 1*
- Normal	44 (47.3)	32 (48.5)	12 (44.4)	
- Malnutrition risk	22 (23.7)	17 (25.8)	5 (19.2)	
- Malnutrition	16 (17.2)	14 (21.2)	2 (7.7)	
- Overweight	8 (8.6)	2 (3)	6 (23.1)	
- Obese	3 (3.2)	1 (1.5)	2 (7.6)	
Associated Psyquiatrc diagnosis (%)				0.6*
- Depressive disorders	28 (30.1)	19 (28.8)	9 (33.3)	
- Personality disorders	38 (40.9)	24 (36.4)	14 (53.9)	
- ADHD	3 (3.2)	2 (3)	1 (3.7)	
Sexual abuse/violation (%)	20 (21.5)	10 (15)	10 (37)	0.02*
Suicide attemp (%)	31 (33.3)	14 (21.2)	17 (62.9)	0.01*
Family dysfunction (%)	82 (88.2)	57 (87.7)	25 (92.6)	0.5*
FSP (%)	52 (56)	36 (55.4)	16 (59.3)	0.14*

F/H: female/man; ADHD: attention deficit hyperactive disorders; FPP: family psyquiatric pathology; *chi-cuadrado; [α]Fisher´s exact test; [£]Student´s t-test.

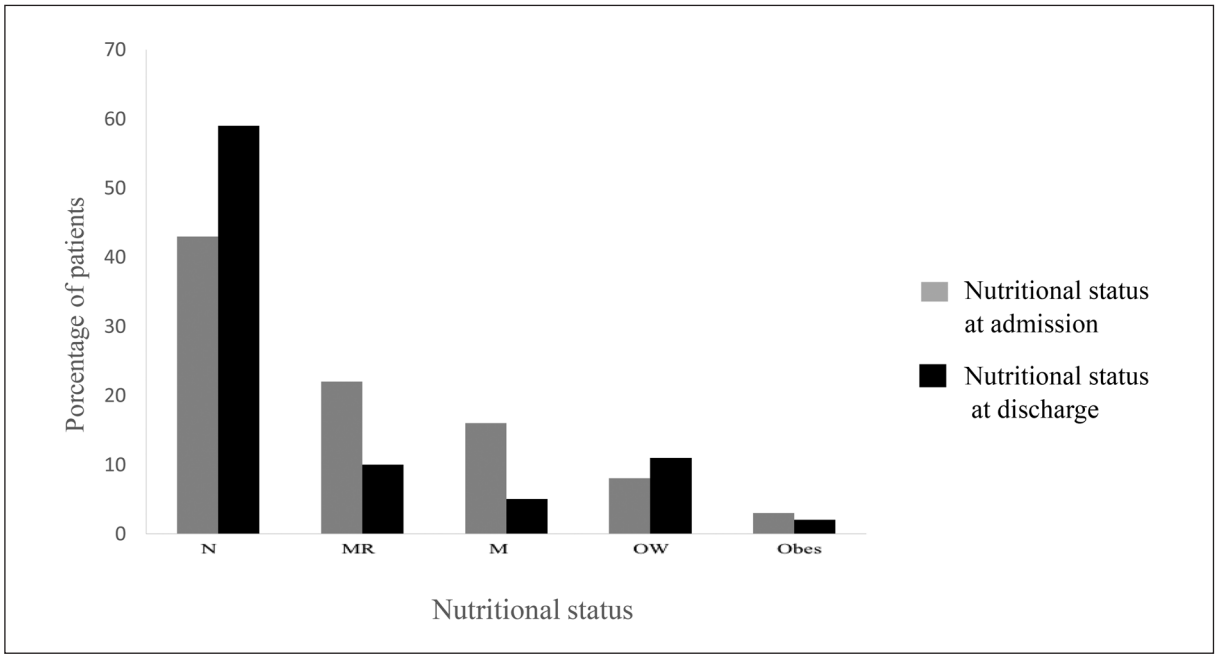

Figure 1. Nutritional status at admission and discharge. At discharge, there is an increase in patients with normal weight (N) and overweight (OW) and a decrease in patients at risk of malnutrition (MR), malnutrition (M) and obesity (OBES).

disorder and impulsive behaviors[22,23], features most seen in patients with other non-AN ED.

A predominance of female patients was observed, with a female to male ratio of approximately 5:1, which is higher for men than that described by Calderón et al.[14] but consistent with what has been reported in more recent studies, as shown in the review by Portela et al.[24]. These differences would be secondary to the increased concern for the body that have today adolescents[9].

When analyzing the nutritional status of the patients, most of them had a normal weight, this would explain the low presence of patients with vital risk, and on the other hand could suggest that patients are early hospitalized, when their outpatient treatment is not working, avoiding health consequences. Early treatment of these patients improves their prognosis and reduces relapses[17,25,26]. Palazzo et al.[27] reported a 77% chance of remission in patients with AN who were treated early.. However, although the nutritional status of patients at risk of malnutrition and malnourished was improved, there was a 4% increase in overweight patients at discharge, generally given by patients with non-AN ED. This should be considered to improve nutritional supervision in this regard, as hospitalized patients have a higher rate of sedentary life and caloric requirements are lower.

Most patients had other psychiatric comorbidities, which has been observed to increase the risk of hospitalizations and is one of the predictors of length of hospital stay[28]. The most frequent comorbidities were personality disorder and depression, which are also the most described in the literature[23]. Depression plays a very important role in the future of the patient after discharge, since its presence increases relapses[29]. It is unclear to what extent these mood disorders are secondary to EDor comorbid conditions secondary to shared etiological background. Therefore, follow-up is necessary in these patients for long periods in order to clear up these questions.

Considering family and patients' own history, , it is important to highlight the high prevalence, in this series, of family dysfunction, psychiatric pathology in the family, and sexual abuse (90%, 56%, and 20% respectively). Several studies have reported a strong association between traumatic childhood experiences and the severity of EDsymptoms[30]. In particular, physical, emotional and/or sexual child abuse has been identified as a non-specific risk factor for the development of ED. These factors could explain, in part, the failure of outpatient treatment, since the patient's therapy requires family care and support[31,32].

Within the limitations of this study is the fact that it is a retrospective work, therefore, the results are based on clinical records and often do not have all the needed data. On the other hand, it does not allow us to study if there is causality between the studied factors, only associations. Many times there was no clarity in the clinical records about variations in diet or psychiatric protocols used, so they could not be taken as factors to study. In addition, DSM-5 appeared during the study period, which may alter the classification of some disorders. However, this alteration would be slight, since the most important changes for this study were in AN where the criteria of low weight (less than 85% of the expected weight) and amenorrhea were eliminated as diagnostic criteria. These changes would rather lead to an increase in the prevalence of AN[33].

Despite the limitations, this is the first study that gives descriptive information about children and adolescents with ED who have required hospitalization in our country.

ED are a biopsychosocial problem that must be addressed initially from the perspective of primary health care, as this is the area where the patient's condition will be detected first.

The information gathered in this study, although it only demonstrates associations, gives us some guidelines on the management of these patients at this level. We should, for example, assess whether there are symptoms of depression or other psychiatric comorbidities, traumatic events, previous suicidal ideation and attempt, family dynamics and whether we can count on the collaboration of the family in the treatment; since these factors, as we see in this study, are frequent in patients who have required hospitalization and could therefore be associated with a worse outpatient evolution. These patients should have more frequent follow-up to reduce or avoid the risk of morbidity and mortality, hospitalization and its duration.

Longitudinal studies are needed in this area, which allow us to evaluate which are the real protective and risk factors for the success of the ED treatment in our population. In addition, ininpatientsv, we must evaluate in some way the protocols we are using, see their real effectiveness in such a way that we have data which can be compared with other protocols and other centers.

Ethical Responsibilities

Human Beings and animals protection: Disclosure the authors state that the procedures were followed according to the Declaration of Helsinki and the World Medical Association regarding human experimentation developed for the medical community.

Data confidentiality: The authors state that they have followed the protocols of their Center and Local regulations on the publication of patient data.

Rights to privacy and informed consent: The authors have obtained the informed consent of the patients and/or subjects referred to in the article. This document is in the possession of the correspondence author. to in the article. This document is in the possession of the correspondence author.

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Conflicts of Interest

Authors declare no conflict of interest regarding the present study.

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