

RESEARCH ARTICLE

Childhood Anorexia Nervosa Compared with Low Weight Food Intake Disorder Without Weight and Shape-Related Psychopathology: A Retrospective Study of 102 Patients

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Abstract

Objective: To compare the clinical presentation of children with anorexia nervosa (AN group) with that of children with low-weight food intake disorder without weight and shape-related psychopathology (non-AN group).

Method: Medical and psychiatric data were obtained from the case records of a consecutive series of 102 children with an eating disorder and a pronounced low weight who were below the age of 13 at the start of treatment.

Results: Fifty-eight patients constituted the AN group, and 44 constituted the non-AN group. The non-AN group was younger and had a longer duration of symptoms than the AN group. The non-AN group also had a lower maximum premorbid weight and shorter stature. There were no differences in medical severity, but the AN group had more psychiatric treatment.

Discussion: The non-AN group seems to have a medically equally severe disorder as the AN group, but is less often detected and properly treated. Copyright © 2016 The Authors European Eating Disorders Review published by Eating Disorders Association and John Wiley & Sons Ltd

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Keywords

child; anorexia nervosa; eating disorders; restrictive eating; course

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Introduction

Restrictive eating disorders (EDs) are not as common in children as in teenagers. There are two recent surveys on the incidence of restrictive eating disorders in children between 5 and 12 years of age: one from the UK (Nicholls, Lynn, & Viner, 2011), which found an incidence of 3.01/100 000, and one from Canada (Pinhas et al., 2011) that found 2.6 cases per 100 000 person years. In a recent study (Kurz et al., 2015), 1444 children aged 8 to 13 years were examined. The aim was to determine the prevalence of the new diagnosis Avoidant/Restrictive Food Intake Disorder (ARFID) in DSM-5 (American Psychiatric Association, 2013). Features of ARFID were found in 3.2% of the children, and they were equally common in boys and girls.

Only a few studies have looked specifically at children with restrictive eating disorders aged 5 to 12 years, and they have often been carried out on rather small samples. We found three studies (Atkins & Silber, 1993; Fosson et al., 1987; Irwin, 1984) that look specifically at children presenting with AN before the age of 13 years. In one study (Peebles, Wilson, & Lock, 2006), 109 patients with ED, who were below the age of 13 at presentation, were compared with 850 ED patients, who were between 13 and 19 years old at presentation. They represented a consecutive series of 959 patients at an eating disorder unit, and were examined using retrospective record reviews. Amongst the children below

the age of 13, there was a lower percentage of expected body weight (%EBW) in relation to age and height at presentation, compared with the rest of the children, and they had lost weight more rapidly, which may have put them at a higher medical risk.

Eating disorder in children often has a different presentation than in adolescents (Cooper, Watkins, Bryant-Waugh, & Lask, 2002; Peebles et al., 2006). Many children with a severe food intake disorder did not fit the diagnosis of AN according to the DSM-IV, but may nevertheless have had a severe medical condition in need of intensive treatment (Peebles et al., 2010). The diagnostic criteria in DSM-5 allow more children with a severe food restriction to be diagnosed as AN, but there is still a group that primarily has restricted food intake and weight loss in common with AN patients, but lacks abnormal cognition or preoccupations regarding weight or shape; the latter is a critical criterion of AN. In a review, Uher and Rutter (2012) concluded that 'cases of restrictive eating with no body image-related psychopathology may be better classified as ARFID'. This group of patients may be diagnosed as ARFID with severe underweight.

Children with a food restriction disorder who do not fit the diagnosis of AN have been shown to have severe medical and psychiatric problems (Lask & Bryant-Waugh, 1992; Peebles et al., 2006). One study on ED with early onset (Cooper et al., 2002) found children with a food restriction disorder not fulfilling the

diagnosis of AN to be quite distinct from AN. The non-AN group in that study consisted of children who had a higher weight at presentation than the two AN groups (91.2% EBW at presentation, compared with 78.1% and 80.5% for the two AN groups, respectively). Thus, there was a difference in the severity of weight loss, which may account for the difference between the two groups.

In the present study, we wanted to see if children below the age of 13 with a low-weight food intake disorder had a less severe disorder than children fulfilling the AN criteria according to DSM-5. We wanted to investigate if the non-AN group had a higher weight, less comorbidity and less psychiatric and medical treatment.

We also wanted to investigate whether the patients that fulfilled the AN diagnosis had a higher premorbid weight than the non-AN group.

Methods

Using retrospective record reviews, we compared the clinical presentation of a group of children with AN with that of a group of children with low-weight food intake disorder, the non-AN group.

All the patients had been in treatment long before the diagnosis of ARFID was established, and the information in the medical files would not have allowed us to make that diagnosis retrospectively; however, it was possible to diagnose AN according to the DSM-5. For this reason, we have chosen the term 'low-weight food intake disorder', as a description of the patients in this study who did not fulfil the AN diagnosis.

Participant selection

All the children included in the present study came from a consecutive series of patients who have undergone treatment at the Skåne Eating Disorders Centre in Lund, Sweden. This is a regional specialized centre for the assessment and treatment of ED in children and adolescents up to 18 years of age. The unit is a part of the Child and Adolescent Mental Health Services, and was established in 1983. During the years 1983–2005, 124 patients between 6 and 12 years of age received treatment. These patients are also included in a larger long-term follow-up study. One hundred and two of these patients had a fast and/or pronounced weight loss that produced medical complications, and were selected for the study.

All the patients in this sample received the same type of family-based treatment with the primary focus on empowering the parents to help their children gain weight.

Data selection

Demographic, medical and psychiatric data were collected through a retrospective case record review. The medical severity was measured with data on %EBW and medical treatment measured by paediatric inpatient care and use of nasogastric tube feeding. The psychiatric severity was measured with data on comorbidity, psychiatric inpatient treatment and use of pharmacological treatment.

Before admission

From the information reported by parents and patients, data pertaining to early feeding difficulties and menarche were used. In Sweden, all children are followed from birth until the age of 19 at least every third year, and more often during the preschool years, with height and weight measurements performed by a nurse. The data are plotted on a growth chart that follows the child throughout the school years. The data from these growth charts were collected for all the patients, and their expected weight was calculated from the individual growth charts (Wikland et al., 2002). The maximum recorded weight preceding admission was retrieved from the growth charts of the school health services, and the %EBW was calculated. The EBW, in relation to BMI, was calculated as recommended by le Grange et al. (2012) ($\%EBW = BMI / 50\text{th percentile BMI for age and height} \times 100$).

At admission

Retrospective data on demography, current ED diagnosis, cognitive ED symptoms, duration of ED symptoms and other medical and comorbid psychiatric conditions were collected from the admission assessment. The patients' height and weight were measured by trained staff members at admission.

End of treatment

Retrospective data at end of treatment in our unit were examined for all the patients, on the treatment given, psychiatric and paediatric inpatient care, tube feeding and/or intravenous feeding, medication and duration of treatment. All data were retrieved from medical and psychiatric records. Weight and height measured at the end of treatment were noted.

Statistical analyses

The results were analysed using Student's two-tailed *t*-test for independent samples, and 95% confidence intervals on SPSS. Measures of stature were recalculated into standard deviation scores (Karlberg et al., 1976).

Ethics

The study was approved by the regional ethical review board at Lund University, reg. no. 2009/619. Approval date 2010-02-10.

Results

Of the total of 102 children, 58 fulfilled the DSM-5 AN criteria and constituted the AN group. The other 44 children fulfilled the weight and food restriction criteria, but had no body image-related psychopathology, and constituted the non-AN group.

At admission

There were five boys and 53 girls in the AN group, and four boys and 40 girls in the non-AN group. Of the girls, 14 in the AN group and two in the non-AN group had their menarche before the onset of the ED (26.4% in the AN group and 5.0% in the non-AN group, $p = 0.004$). The non-AN group had experienced more feeding difficulties early in life, with 18 cases in the non-AN group and only two cases in the AN group (41.0% in the non-AN group and 3.4% in the AN group, $p < 0.001$).

Table 1 Clinical features at admission of the patients. Patients in the AN group are compared with patients in the non-AN group

	AN	Non-AN	<i>p</i>
<i>N</i> (boys/girls)	58 (5/53)	44 (4/40)	
Age	12.0 (11.8–12.1)	11.1 (10.9–11.3)	0.002
Duration of symptoms, months	5.9 (4.7–7.1)	11.0 (6.7–15.3)	0.026
Highest premorbid %EBW	113.7 (111.8–115.7)	101.7(99.5–103.9)	<0.001
%EBW at admission	83.6 (76.4–81.1)	81.2 (76.5–80.0)	0.201
Height at admission, SDS	0.40 (0.13–0.67)	−0.15 (−0.45–0.26)	0.032

Values are given as means and CI = 95% confidence interval.

AN, anorexia nervosa group; non-AN, non-anorexia nervosa group—patients who do not fulfil the criteria for anorexia nervosa, except for restricted food intake and weight loss; %EBW, percentage of expected body weight; SDS, standard deviation scores. Significance of difference in comparison with population mean (i.e. SDS = 0).

Table 1 presents the data comparing the AN with the non-AN groups at admission.

The AN group was older and had a shorter symptom duration than the non-AN group. The weight at admission was similar across groups. The non-AN group had a lower highest premorbid weight and shorter stature.

Psychiatric comorbidity did not differ across groups: 48.3% in the AN group and 40.9% in the non-AN group had other psychiatric diagnoses, but the comorbid diagnoses were slightly different. Obsessive–compulsive disorder and anxiety disorders were at the same level, but depression was more common in the AN group. Table 2 presents the different diagnoses in the two groups.

The non-AN group differed from the AN group by a life history of low weight. Of the children in the AN group, 6.9% had never been above 95% EBW, according to their growth charts; in the non-AN group, the figure was 43.2%. The highest premorbid weight was recorded at a mean age of 9.4 years. Nowadays, the definition of overweight, according to the WHO, (15) is a BMI of 19.4 for both boys and girls, which is equivalent to 119.0% EBW. In the AN group, 32.8% had weighed more than 118% EBW compared with 13.6% in the non-AN group. One third of the AN group had been overweight before AN onset, but very

Table 2 Psychiatric comorbid diagnoses for patients in the AN group compared with patients in the non-AN group

	AN group (<i>N</i> = 58)	Non-AN group (<i>N</i> = 44)
Depression	21	6
OCD	6	6
GAD	1	3
Specific phobia	—	1
ADHD	1	—
ODD	1	—
ASD	—	2
Tourette's disorder	-	1

OCD, obsessive–compulsive disorder; GAD, generalized anxiety disorder; ADHD, attention deficit hyperactivity disorder; ODD, oppositional defiant disorder; ASD, autism spectrum disorder.

few had ever been premorbidly underweight when compared with the non-AN group.

At end of treatment

End-of-treatment data from our unit are presented in Table 3.

The non-AN group had significantly lower weight at the end of the treatment, fewer inpatient days in psychiatric care, and shorter treatment periods. The non-AN group had received any medication less often: 13 cases in the AN group versus three cases in the non-AN group (28.9% compared with 8.8% $p = 0.020$). In the AN-group, it was mainly antidepressant medication (seven cases of SSRI and three cases of TCA), and in two cases, low doses of antipsychotic medication (1 case of olanzapine and 1 case of tioridazin). The non-AN group had only antidepressant medication (2 cases had SSRI and 1 case had TCA). The non-AN group had less psychiatric inpatient treatment, but the extent of paediatric inpatient treatment was the same, and the use of tube and/or intravenous drip treatment was comparable: 11 cases in the AN group and six cases in the non-AN group. At the end of the treatment, 87.9% in the AN group had achieved more than 85% EBW, compared with 59.1% in the non-AN group. In the AN group, 70.7% had achieved 95% EBW, compared with 27.3% in the non-AN group.

Discussion

In the present study, the total group of children with severe weight loss often fulfilled the AN criteria, but the group also included patients with low weight and substantial medical and psychiatric symptoms but no weight and shape-related psychopathology. Our study suggests that the group of children who do not fulfil the AN criteria are, in many respects, quite similar to the AN group.

At admission, there were no differences across the groups of AN/non-AN in relation to other psychiatric diagnoses. The non-AN group was characterized by the same level of starvation as those with AN, but with no abnormal cognitions or preoccupations regarding weight or shape. The non-AN group was younger than the AN group, and it could be argued that the age difference between the two groups, at least in part, could explain the differences, in that the absence of cognitive symptoms could be a result of the lack of emotional and cognitive maturation.

Many of the patients in the non-AN group may today fulfil the criteria for ARFID, according to the DSM-5. There are three recent studies on clinical samples, performed mainly on patients that were older than the patients in our study, with ages ranging from 7 to 18 (Fisher et al., 2014; Nicely, Lane-Loney, Masciulli, Hollenbeak, & Ornstein, 2014; Norris et al., 2014). In these studies, it was found that the patients with ARFID were younger than the patients with AN. The patients with ARFID were more likely to be boys when compared with the patients with AN, in all three of these studies, just as in the population-based study on children by Kurz et al (2014). In our study, the proportion of boys was the same in the AN-group as in the non-AN group. The patients in our study were treated between 1983 and 2005, whereas in the ARFID studies, the patients all started treatment after 2000. Eating disturbances in boys are often missed (Muisse, Stein, & Arbes,

Table 3 Clinical features at end of treatment at Skåne Eating Disorders Centre. The AN group compared with the non-AN group

	AN (N = 58)	Non-AN (N = 44)	<i>p</i>
%EBW at end of treatment	99.3 (97.8–100.7)	88.8 (87.2–90.4)	<0.001
Height at end of treatment, SDS	0.17 (–0.16–0.49)	–0.08 (–0.40–0.25)	0.378
Psychiatric inpatient treatment, days	49.5 (25.1–73.9)	14.5 (7.2–21.8)	0.010
Paediatric inpatient treatment, days	15.5 (6.2–24.9)	11.5 (–10.9–23.1)	0.5965
Duration of treatment, years	2.4 (2.2–2.7)	1.7 (1.4–1.9)	0.023

Values are given as means and CI = 95% confidence interval.

AN, anorexia nervosa group; non-AN, non-anorexia nervosa group—patients who do not fulfil the criteria for anorexia nervosa, except for restricted food intake and weight loss; %EBW, percentage of expected body weight; SDS, standard deviation scores. Significance of difference in comparison with population mean (i.e. SDS = 0).

2003), and even more at the time of our study, which may explain at least part of the low number of boys in our study.

The non-AN group in our study had a longer duration of symptoms than the AN-group and the same level of comorbidity. ARFID, when compared with AN, had a longer duration in Fisher et al. (2014), but the same duration in Nicely, Lane-Loney, and Masciulli (2014) and Norris et al. (2014). ARFID had the same level of comorbidity in Norris et al. (2014), but a higher level of anxiety disorders in Fisher et al. (2014) and Nicely et al. (2014). They also reported a lower level of depression than in AN, which is comparable with the non-AN group in our study. There seem to be both similarities and differences when comparing the non-AN group in our study with ARFID. The differences could be explained by the lower age of the participants in our study.

Early feeding difficulties, lower lifetime weight and shorter stature for age at admission were frequent in the non-AN group. The non-AN group had a longer duration of eating disorder symptoms, with an impact on development, which seems not to have been recognized. This may be a result of slower onset of the disorder. At the end of the treatment, there were no differences in stature between the groups. The non-AN group seems to have been able to compensate this developmental sign of poor nutrition.

The degree of emaciation and its medical consequences appear to have been just as severe in the non-AN as in the AN group. The non-AN group had shorter treatment duration, less psychiatric inpatient care and had received less medication, which may indicate a less severe disorder. This may support the hypothesis that AN is a more severe psychiatric disorder. The type of medication used was similar, with the exception of two cases of antipsychotic medication in the AN group. The AN group received more psychiatric treatment, but it may be because the non-AN group was younger, and clinicians might be reluctant to prescribe medication and hospitalize these young patients.

At the end of the treatment, the non-AN group had lower weight compared with the AN group, but there were no differences in height across groups, which may indicate that they were medically stable and displayed linear growth at a lower weight. The non-AN group was characterized by low premorbid weight, and within the non-AN group, there was a group of children who had always been below 95% EBW. Furthermore, some of

the girls, even at low weight, had been through the menarche, and despite their low weight at admission, they were taller than those with AN and premorbid normal weight. More than 40% of the non-AN patients were considered to be clinically healthy at a weight below 85% EBW and had a lifelong history of relatively low weight.

At admission, the patients in the non-AN group had a weight loss from 101.7% EBW to 81.2%, compared with the AN group that had a weight loss from 113.9% down to 83.6%. The non-AN group did not gain as much weight as the AN group in order to recover. However, the shorter treatment duration may have been a result of the absence of weight and shape concerns, and it cannot be completely verified from our data that the treatment was not prematurely terminated. The patients in the non-AN group in this study received the same family-based treatment as the AN group, and seem to have benefited from that treatment. Because of the low weight and the medical complications, the primary aim of the treatment was for the child to gain weight. Based on current knowledge, there is support for the treatment of choice being family-based, also for non-AN food restriction eating disorders (Couturier, Kimber, & Szatmari, 2013; Loeb et al., 2012).

Within the non-AN group, there was a small group of patients with a weight below 85% EBW when they were considered recovered by the clinicians, and their physical development was back to normal. The definition of full weight remission is often 95% EBW (Couturier & Lock, 2006). This is important to consider when working clinically with these children. They cannot be expected to reach the statistically normal weight, and, thus, their individual growth curve is a better tool for indicating their ideal weight.

A limitation of this study is its retrospective character with a relatively small sample, using baseline patient characteristics as data. The data were derived from a clinical setting and medical records collected over a long time period, when some changes to clinical practice may have occurred. Even though the care providers were basically the same, there may have been differences with regard to the data collection process. Another limitation is the significant difference in age at admission between the AN group and the non-AN group, which may have influenced the validity in the comparisons made between the groups. The age difference may reflect a real age difference of the onset of the

eating difficulties between the AN and the non-AN group, as all the participants were consecutively admitted to the unit. The strengths are the representativity of the sample, consisting of almost all consecutive patients in a specific region in the south of Sweden, examined in a structured way by basically the same care providers.

Some of the issues in the present study will be explored in an ongoing long-term follow-up study of children 5 to 12 years of age who have received treatment at our eating disorder unit—a study that includes this sample. This follow-up study will make it possible to compare the course and outcome of food restriction ED between the non-AN group and the AN group.

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