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Original article

Frequency and Patterns of Eating Disorder Symptoms in Early Adolescence

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A B S T R A C T

Purpose: There are still uncertainties about manifestations of early adolescent eating disorders (ED) and their effects. We aimed to determine the prevalence of ED symptoms in early adolescence, derive symptoms dimensions, and determine their effects on social and psychological outcomes and subsequent body mass index (BMI).
Methods: Data on 7,082 adolescents aged 13 years from the Avon Longitudinal Study of Parents and Children were obtained on ED symptoms, resulting impairment and family burden and emotional and behavioral disorders using the parental version of the Developmental and Well-being Assessment. Exploratory structural equation models were used to derive ED symptoms dimensions separately by sex and to relate these to contemporary outcomes (impairment, burden, and emotional and behavioral disorders) and a distal outcome (objective BMI at age 15 years).
Results: Extreme levels of fear of weight gain, avoidance of fattening foods, and distress about weight and shape were common among girls (11%). Three ED symptoms dimensions were identified: bingeing/overeating, weight/shape concern and weight-control behaviors, and food restriction. Bingeing/overeating was strongly associated with higher functional impairment, family burden, and comorbid psychopathology. Bingeing/overeating and weight/shape concern and weight-control behaviors predicted higher BMI 2 years later, whereas food restriction predicted lower BMI. These effects did not change when BMI at age 13 years was included in the model.
Conclusions: Eating disorder cognitions are common among young teenage girls. Eating disorder symptoms have adverse cross-sectional and distal consequences, in particular on increasing body weight 2 years later. These findings have important implications for early identification of adolescents engaging in ED behaviors and for obesity prevention.
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IMPLICATIONS AND CONTRIBUTION

Eating disorder behaviors and cognitions are common in early adolescence and are negatively associated with a series of social and psychological outcomes. Most important, they predict weight status 2 years later. Public health efforts for early identification and prevention of eating disorders are therefore crucial.

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There is increasing evidence that eating disorders (ED) might be more common than previously thought [1,2]. Eating disorders have a peak of onset between ages 15 and 19 years [3]; in a recent study, we showed that in adolescent and young adult United States girls, ED predicted overweight and obesity as well as psychopathology and substance use [1]. Few studies have investigated the short- and long-term effects of adolescent ED behaviors on social, psychological, and physical health.

Challenges to clarification of the epidemiology and impact of adolescent ED behaviors include remaining uncertainties about classification and whether current diagnostic systems apply to adolescents [4], as well as little knowledge about how ED behaviors present in early adolescence (13–14 years) in community samples. Understanding ED behaviors and cognitions at this developmental stage and how they affect a series of outcomes might prove fruitful for increased knowledge of the early constellation of symptoms that index prodromal ED or at-risk states, and to aid in prevention.

To our knowledge, no population-based studies outside the United States have investigated associations between a wide range of ED symptoms in early adolescence and social, physical, and psychological outcomes. Moreover, few longitudinal population-based studies in the world lend themselves to a similar investigation.

This study aimed first to investigate ED symptoms in girls and boys from a population-based study in the United Kingdom (UK), the Avon Longitudinal Study of Parents and Children (ALSPAC) and how they clustered into observable dimensions (latent variables) at age 13 years. Second, we attempted to determine whether identified ED symptoms dimensions would be associated with contemporary impairment, family burden, and emotional and behavioral disorders, and predict body mass index (BMI) 2 years later.

Because of the availability of statistical techniques allowing obtaining latent factors (dimensions) from observed data and jointly modeling a predictive model, we set out to use this framework to achieve these aims.

Methods

Participants

The Avon Longitudinal Study of Parents and Children is a longitudinal, population-based study of 14,541 women and their children, who were prospectively enrolled [5,6]. All pregnant women in the geographical area of Avon, UK, who were expected to deliver their baby between April 1, 1991 and December 31, 1992 were invited to take part in the study. All women gave informed and written consent. At 1 year, 13,988 children were alive. Questionnaires were sent to parents of 10,135 children still enrolled in the cohort at age 13 years and 479 children who were enrolled in ALSPAC in a second phase of the study (for details, see [6]). Questionnaires were returned by 7,165 parents (67.5%).

Mean age at data collection was 13.1 years; 99% of adolescents were younger than 13.9 years of age at questionnaire completion. Adolescents whose data were collected at >14.5 years (N = 7) were excluded.

A total of 76 twin-pairs provided data; one twin per pair was randomly excluded from the current analyses. The total study size was 7,082 adolescents.

Eating disorders symptoms

We collected information from questions on ED behaviors and cognitions from the ED section of the Developmental and Well-being Assessment (DAWBA), a semistructured interview that generates a range of psychiatric diagnoses in children and adolescents based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV) [7] and *International Statistical Classification of Diseases and Related Health Problems*, 10th revision (ICD-10) [8] criteria. The DAWBA has a specific ED section of questions designed to obtain DSM-IV and ICD-10 diagnoses of anorexia nervosa, bulimia nervosa and eating disorders not otherwise specified for epidemiological studies. A questionnaire version of the ED-DAWBA was used for this study, which was composed of 28 questions on ED behaviors and cognitions, four on impairment on the adolescent life as a result of ED symptoms (detailed below), and one on burden on the family or the parent caused by the symptoms [9].

Cognitions investigated were fear about weight gain and being upset or distressed about weight and shape. Behaviors investigated were avoidance of fattening foods, food restriction (a summary variable incorporating eating less at mealtimes, skipping meals, and going without food for long periods of time [i.e., all day or most of the day]), exercising for weight loss, and purging (self-induced vomiting and use of laxatives or other medicines for weight loss).

Parents were asked to report about the child's bingeing (losing control over eating and eating a large amount of food in a short time) in terms of monthly, weekly, or twice a week or more; questions on compensatory behaviors allowed answers of "no," "a little," "a lot," and "tried but not allowed" (the latter category was recoded as "a little," with intention being conceptualized as indicating presence of the behavior).

Contemporary outcomes

Social impairment and family burden of eating disorder symptoms. Impairment was derived from the ED-DAWBA questions asking "How much do you think the eating patterns/concerns about weight and shape have interfered with: how well he/she gets on with the rest of the family? making and keeping friends? learning or class work? hobbies, sports or other leisure activities?" All stems had a four-level Likert response ("not at all," "a little," "quite a lot," and "a great deal"). A categorical summary variable was generated from the answers to these questions: "no impairment" (no impairment reported on any aspect of the adolescent's life) or "high" impairment (any question answered as "a lot" or "a great deal"); any other combination was coded as "some impairment."

Burden to the family was derived from the question "Have the eating patterns/concerns about weight and shape put a burden on you or your family?" The question had a four-level Likert response ("not at all," "a little," "quite a lot," or "a great deal"); we combined the "quite a lot" and "a great deal" categories.

Psychopathology: emotional and behavioral disorders. At the same time, parents completed a questionnaire version of the DAWBA for all other mental health disorders. As described above, the DAWBA is a validated instrument to assess psychopathology in children and adolescents [10,11]. Variables indicating presence of any DSM-IV or ICD-10 emotional and behavioral disorder were obtained from the DAWBA using computer algorithms (as detailed in [9]). These diagnoses have been shown to be valid albeit likely to underestimate psychopathology [9]. Computer-generated diagnoses using the parent-rated DAWBA have been shown to have

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