

Unhealthy eating behaviour in adolescents

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Abstract. In recent years, eating disorders (Anorexia and Bulimia Nervosa) have increased and are appearing at increasingly younger ages. They affect predominantly adolescent females 12 to 25 years of age. The objective of this study of adolescents is to detect and discuss unhealthy eating behaviour, defined by either of two factors: (1) following a slimming diet not advised or supervised by any person trained in health care; or (2) eating very large quantities at irregular times, not related to anxiety or stress. A transversal study has been undertaken of 630 school children of 14–18 years of age (average: 15.9 years) in Cádiz (Andalucía, Spain), using an anonymous self-reporting questionnaire to collect data on personal and educational situation, on eating habits, on nutritive intake and knowledge of nutrition, and on dieting and physical exercise. The study has considered averages, ratios, statistical significance

(χ^2) and, as a measure of risk, the Disequality Ratio of Prevalence (DRP). Anomalous eating behaviour was detected in 46.3% (292), with females predominant by a ratio of 2:1. Comparing groups with anomalous and with normal eating habits, significant differences were detected in respect of: perception of body image ($p < 0.001$), frequency of weighing oneself ($p < 0.05$), periods of abstinence from eating (DRP 1.66; 95% confidence interval (CI): 1.66–2.37), provocation of vomiting (DRP 2.02; 95% CI: 1.13–3.65), use of laxatives (DRP 4.25; 95% CI: 1.08–9.63), and the exclusion of certain meals and types of food, mainly bread and cereals, fats and sugars. Conclusions are drawn on the substantial scale of unhealthy eating behaviour among adolescents in Cadiz. More adequate education on personal health and related social issues should be provided.

Key words: Adolescents, Eating behaviour, Epidemiology

Introduction

Eating disorders are defined as: 'those in which there exists an excessive preoccupation with the figure and control of body weight, together with a markedly insufficient and/or irregular food intake'. Important among these disorders are anorexia nervosa (AN) and bulimia nervosa (BN). The first disorder is characterised by the rejection of maintaining body weight within minimum normal values; in the second, recurrent episodes of voracious eating are followed by inappropriate compensatory conduct (vomiting, use of laxatives and diuretics, abstinence from food) [1].

In recent years, there has been greater social awareness of these conditions, both for their seriousness and for their increasing incidence and appearance at ever-younger ages [2–6].

These are conditions that, by the time they are diagnosed definitively, are often chronic, after a succession of consultations over time with many different specialists [7].

These disorders appear basically in adolescents from the age of 12, up to 25-year old adults [8, 9]. Some 85% to 95% of cases occur in girls, generally but not always of middle or high social class [8, 10].

The percentage of deaths varies between 5% and 10%, as a consequence both of the alterations involved in the disorder itself, and of the self-destructive behaviours associated with these alterations [11, 12].

In the aetiology of the condition, authors are increasingly attributing greater relevance to the other contributing factors that must be considered in addition to the predisposing factors inherent in the individual (principally the personality of the subject) and the family (genetic influence, there being a higher risk of suffering these disorders among relatives of first degree [1]). The more significant among these other contributing factors are: the following of strict slimming diets; dissatisfaction with the subject's own body (subjects see themselves as fat) and imitation of the fashion for being slim [13–15].

An essential characteristic of both AN and BM is an alteration in the perception of figure and body

weight, with self-damaging alterations in behaviour frequently being presented [16–21].

The general objective of our study is to detect and quantify unhealthy behaviour related to eating habits in adolescents. It is intended that the results of the study should serve as a working tool in planning a programme of intervention among adolescents with the aim of modifying their eating habits.

Materials and methods

A transversal survey was carried out of adolescents of Cádiz, in Andalucía, SW Spain, aged between 14 and 18 years, during the 1995–1996 academic year. Subjects were children attending six secondary schools in the city, selected taking into account the socio-demographic characteristics of the whole student population of Cádiz. These schools are also representative of the Spanish system of education as regards type of education provided and proportions of children of each age group attending the different types of school.

The minimum size of the sample was determined as 600 subjects, taking into account $p_0 = 0.50$ and $C = 0.95$, considering that, according to the city's Education Department, the total number of school students registered for the 1995–1996 course was 12,249.

The following were the criteria for sample selection:

- (1) Type of educational course:
 - Vocational model (known in Spain as FP: Formación Profesional), accounting for 29% of the total students
 - Academic model (recently re-organised in Spain, now known as ESO: Enseñanza Secundaria Obligatoria, previously known as BUP: Bachillerato Unificado y Polivalente, with a higher, pre-university level COU: Curso de Orientación Universitaria), accounting for 71% of the total students.
- (2) Type of school (public or private):

The vocational course (FP) is only taught in public schools, whereas the academic (ESO–BUP/COU) course is available in both public and private schools. In our case, 49% of these students attend public and 22% private schools.

The composition of the sample was based on these percentages.

Two schools of each of the three types were selected, their locations reflecting the socio-demographic characteristics of the city. Later, from the lists of students registered at each school, the members of the sample were randomly selected according to sex, age (14–18 years) and type of course.

Survey data were collected by means of a written questionnaire completed by the students of the sample. This questionnaire was piloted first with 60

students from another centre not included in the actual sample, and corrected. The survey comprised three main parts:

- (1) Personal data, perception of own image, diets followed, use of slimming drugs/preparations, periods without eating and their duration, intensity of appetite, provocation of vomiting, health checks. (29 questions in total, either yes/no or multiple choice type.)
- (2) Eating habits (9 questions, yes/no and multiple choice) and simplified nutritional survey of food intake during the previous day, by indicating the types of food included in each of the meals taken, and in between-meals eating. Foods were grouped into eight categories for subjects to select. (5 questions: Survey validated by the School of Nutrition of the University of Granada.)
- (3) Questionnaire on general knowledge of nutrition (identification of fats, proteins and carbohydrates, energy value of different foods, healthy foods, etc., with a total of 14 multiple choice questions). A score was given to each subject on a scale of 0 to 14.

For the validation of the first and third parts of the survey questionnaire, its reliability in terms of internal consistency, together with the validity of content and construction, and the validity of criteria, were considered. This latter factor was obtained by submitting the questionnaire to 20 adolescents confirmed as having clinical eating disorders (attending the Anorexia and Bulimia Unit of the Jerez de la Frontera General Hospital, Cádiz) and 20 previously selected adolescents with normal eating behaviour. This confirmed a sensitivity and specificity of 95% for the questionnaire.

All the adolescents in the sample were weighed and their heights measured with the same instrumentation. The survey was administered by the same professionals, after prior instruction, in each of the six schools.

A total of 663 questionnaires were issued, of which 33 were rejected for the survey purposes: 18 because the student's age was outside the parameters established; 7 because of incomplete data; and the remaining 8 were returned blank. Therefore the study was conducted on the basis of a sample of 630 students.

Once the full data had been collected, the sample was divided into two groups for comparison in relation to eating habits. The first group included all subjects who stated that they had followed 'a slimming diet chosen and modified by them, that had not been advised or supervised by any health-care professional or knowledgeable, trained person', together with those who indicated 'feeling a huge appetite that made them eat intensively, even between their normal mealtimes of breakfast, lunch, tea and supper (in other words, consuming large quantities of foods in short periods of time), this behaviour not being

related to conditions of anxiety or stress, for example, school examinations'; the verbal instructions given in respect of this last point were very specific, subjects being excluded if there was any possibility of such behaviour having been provoked by anxiety. The second group included all the subjects not showing the characteristics of the first group.

The characteristics of the first group were established in line with the conclusions of various authors that these two factors were highly relevant contributors to the conditions of AN and BN, which have been taken together, given that our objective was the detection of bad or unhealthy eating habits in general [8, 12, 16, 18].

After the collection of the information, it was tabulated for analysis and corresponding statistical study, using the χ^2 test of statistical significance with the corrections of Mantel-Haenzel and of Yates, where necessary. The measurement of risk used was the Disequality Ratio of Prevalence (DRP) with confidence intervals of 95%. The data analysis program used for all the information was the EPIINFO, CDC Atlanta (Georgia) and SPSS software package.

Results

A total of 630 school students were studied, consisting of 355 males (56.3%) and 248 females (43.7%). The average age of the subjects was 15.9 years. The majority (79.7%) were attending public schools while 20.3% attended private schools. Table 1 gives some of the main characteristics of the total sample of students studied.

A total of 292 subjects (46.3%) were found to have anomalous eating habits. Of these, 33 made reference to 'following a slimming diet not advised by any healthcare professional' and 259 indicated that they 'felt a huge appetite that made them eat intensively, even between their normal mealtimes of breakfast, lunch, tea and supper (in other words, consuming large quantities of foods in short periods of time), but without any possible relation to states of anxiety or stress'.

Table 1. General characteristics of the total sample

	n	%
Total young people studied	630	
Males	355	56.3
Females	248	43.7
Average age	$x = 15.9$	
Public schools	502	79.7
Private schools	128	20.3
ESO students	259	41.1
FP students	184	29.2
BUP/COU students	187	29.7
Anomalous eating habits	292	46.3

The average age of this group with alterations in their eating habits is 15.9 years, with a standard deviation of 1.22, there being no significant difference compared with the second group of adolescents who showed normal eating habits.

However, an association was found between altered eating behaviour and female sex, with a DRP of 1.88 (1.32–2.62); this means that the female has 1.88 times more probability of showing anomalous eating habits than the male.

Within the group with anomalous eating habits, there was not a single subject with manifest obesity, only 3.2% showed moderate obesity, and 14.5% with aesthetic obesity. Low weight was found in 26.8% and normal weight in 55.4% (according to the research criteria of CIE-10). We may conclude from this that the anomalous eating behaviour identified in the survey is not justified by any real need to lose weight. However, it was observed that the subjects following such anomalous eating models believe that their weight is excessive in relation to their height, in contrast to those who show normal eating habits ($p < 0.001$). This finding indicates that the characteristic of thinking one's weight is not appropriate for one's height is associated with the tendency towards anomalous eating behaviour (DRP 0.58; 95% confidence interval (CI): 0.41–0.81).

In addition, differences were found between the two groups when comparing the frequency of weighing oneself ($p < 0.05$). The group of adolescents following anomalous eating habits weigh themselves with significantly greater frequency.

Significant and clear differences were found in other anomalous eating behaviours between both groups, such as undergoing periods of abstinence from eating, provoking vomiting and frequency of provoked vomiting, use or not of laxatives and frequency of this use, as well as the use of medications and/or other products for slimming, such as fibre-rich products or infusion drinks (Table 2). In contrast, no relationship or link was found between anomalous eating habits and the practice of physical exercise and sports.

Table 2. Eating behaviours

	Abnormal/Normal	
	DRP	95% CI
Periods of time without eating	1.66	1.66–2.37
Provocation of vomiting (1 to 3 times per day) Frequency: 61.3%	2.02	1.13–3.61
Use of laxatives (1 to 3 times per day) Frequency: 71.4%	4.25	1.08–9.63
Consumption of fibre-rich and other slimming products	2.75	1.49–5.10
Physical exercise and sports	0.65	N.S

With regard to the food consumption of the two groups, a significant difference was found on whether breakfast was eaten or not ($p < 0.05$), and on the practice of eating between meals (DRP 2.14; 95% CI: 1.52–3.03); the finding was that adolescents belonging to the group with anomalous eating habits tended largely not to eat breakfast but to pick at food more between meals and that these two tendencies could be related. This latter fact was confirmed when the characteristics of diet over the past 24 hours were evaluated in terms of quality. A comparison between the two groups revealed a clear and significant difference in respect of the intake of food between meals ($p < 0.005$).

An association was obtained between anomalous eating behaviour and the avoidance of certain kinds of food or meal (DRP 1.54; 95% CI: 1.10–2.16), the relative consumption of bread and cereals, fats and sugars being the food factors differentiating the two groups (Figure 1).

In the evaluation of the knowledge about foods possessed by adolescents, based on 14 questions asked, no differences were found in the scores obtained by the two groups (an average of 6.63, $S_x = 2.33$), both groups having better knowledge than the average for adolescents in general. No association was found between abnormal eating behaviour and age.

Lastly, in respect of the two different types of education, public and private, an association was found between this factor and the tendency to anomalous eating behaviour. It was found that attending a private school was associated with normal behaviour, (DRP 0.66; 95% CI: 0.43–1.0). Also the fact of having to repeat a year of the course seemed to have a certain positive association (DRP 0.77; 95% CI: 0.47–1.25), indicating that alterations are more likely in subjects with better academic performance.

It is notable that the highest percentage of subjects showing altered eating behaviour was found among students of ESO (the younger students on academic

courses) (47.1%), followed by those in FP (29.7%) and thirdly by those in BUP/COU (the older students on academic courses) (23.2%).

Discussion

The high percentage of adolescents with anomalous eating behaviour (46.3%) found in our study coincides with the findings of various other authors [5, 8, 10, 12, 16, 18]. An increase in the prevalence of partial eating disorders has been observed as reported by Shisslak in a recent review article [32].

We observe a considerable predominance of young people at risk of bulimic behaviour (i.e. feeling a huge appetite that makes them eat in an intensive, voracious way, unjustified by a state of anxiety) ($n = 292$), compared with those displaying anorexic behaviour ($n = 33$). These data are generally in line with the findings of Issenmich, who puts the bulimia percentage at 2–5%, compared with anorexia at 0.2–1.0% [26]. However, the present survey data does not help to explain this large disparity in our sample. It may be speculated that it reflects a basic difference between the two types of behaviour: dieting involves self-discipline and consistency over a period of time, and is not likely to involve expectations of quick results; on the other hand, bingeing and/or vomiting is more impulsive, and is perhaps seen as giving more immediate results. Another factor may be that young people regard unsupervised dieting (i.e. anorexic behaviour) as more intrinsically 'wrong' than bingeing (i.e. bulimic behaviour), and are consequently less inclined to admit to anorexic behaviour in a survey such as ours. This disparity and its possible explanations, such as those suggested here, are clearly important and should be borne in mind for future research.

Overall, it is important to state that although the present study does not deal with young people actually diagnosed as having AN or BN, our results have been compared with the findings of other studies in the literature related to these conditions, given that there are many more of these studies than those dealing with bad eating habits, such as our present study, in the bibliography. We are aware that this is not totally satisfactory, given the clear differences between the clinical forms of AN and BN, and abnormal eating behaviour.

Hence, the average age of the adolescents in this study (15.9 years) coincides with that found by most authors. Madruga, for example gives 15 years of age, describing two peaks at which anorexia begins, one at 13–14 years and the second at 16–17 years [24]. Serra, Morande and Saldaña, among others, find similar ages [8, 9, 24].

There appears to be unanimity with regard to the greater frequency of these conditions occurring in female subjects. However, our results are consider-

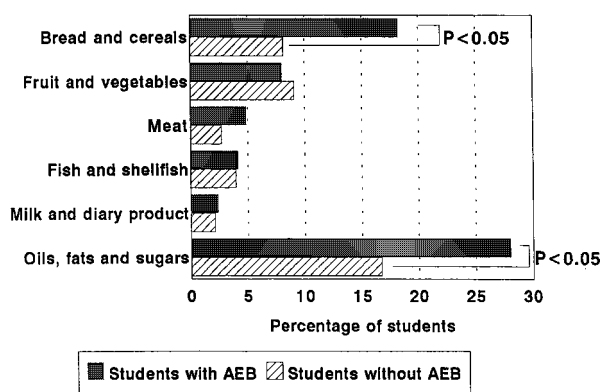


Figure 1. Foods excluded or avoided by school students of 14–18 years, with and without altered eating behaviour (AEB). Cádiz, 1996.

ably lower than those described by other authors. Whereas in the present study a proportion is found of one male for every two females with anomalous eating behaviour, Saldaña writes of one male for every 11 females [24], and Morande of one male for every 9 females [9]; Serra and Toro also establish higher proportions of females than our study [8, 12].

This can be interpreted as indicating an increasing preoccupation by young males with their body image, with a tendency to adopt anomalous attitudes to eating that to date have been much more typical of females.

The data obtained indicating the relative lack of obesity among adolescents with anomalous eating behaviour, together with that on the alteration of their perception of the weight/height relationship, and frequency of weighing themselves all coincide fully with the descriptions given by Madruga, Lázaro, Gómez, Lanzi and Perpiña [5, 10, 16, 17, 27].

Several authors indicate that such adolescents avoid cereals and sugar in their diet [25, 26, 28]; in addition to these foods, the adolescents identified in our survey also avoided bread and fats, with a consequent more severe restriction in their diet.

In general, the eating behaviours described in our study, such as extended periods without eating, provocation of vomiting, the use of laxatives and other medication for slimming coincide with those found by other authors, such as Serra, Morande, Lázaro, Toro and Perpiña [8, 9, 10, 12, 27]. Such behaviour would seem to be influenced by publicity directed especially towards young people. The paper of Lázaro quotes publicity material offering recommendations for slimming which include the use of medicinal plants, laxatives, not consuming fats and sugars, and increased physical exercise. However, the effect of such influence was not evaluated in our study.

In respect of the type of education, no references have been found in the literature that establish differences between the various courses followed by adolescents, nor between private and public schools. Where our findings do coincide with those of other authors is that behavioural eating disorders usually develop among young people with good academic performance [8, 12, 24, 29–32].

The following possible limitations of this study should be taken into account: (1) the method used to carry out the survey of nutritional intake was not the most satisfactory, but it was considered that simply requesting information on the number of meals and types of food eaten the previous day would provide more reliability, by avoiding the bias of memory; (2) the possibility that the subjects did not give truthful answers to some of the questions relating to bad eating habits, either through shame, ignorance or reluctance to admit to behaviour considered to be wrong; this may have influenced the disparity found between anorexic and bulimic behaviour. Overall,

however, this factor is more likely to have understated rather than overstated the scale of both kinds of anomalous behaviour identified in the survey, and (3) the methodology was not designed to evaluate any personality traits or psychiatric disorders that may be presented by subjects, and that may influence their eating behaviour. But despite these limitations, the results obtained are disturbing.

The large scale of bad eating habits prevalent among young people is a significant finding. Other key findings are the higher than expected incidence of anomalous eating behaviour among males (who until now have only appeared on the margin of this problem), and the exclusion of a considerable number of food types from the diet of these adolescents.

Overall, the conclusions indicate the need to establish an early diagnosis of these attitudes and conditions as a means of improving their prognosis.

It would seem particularly important to promote healthy eating behaviour through proper healthcare education, to give young people positive values regarding healthy, varied foods and a balanced diet. This should be in conjunction with effective social education aimed deliberately at a positive change in young people's perception of their own body and physical appearance.

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