

# Incidence and Detection of Bulimia in a Family Practice Population

Heidi Zinkand, Remi J. Cadoret, MD, and Reuben B. Widmer, MD  
Iowa City, Iowa

In a study of a family practice population, 20 percent of the 176 participants, ranging in age from 14 to 42 years, showed abnormal eating concerns and habits as indicated by their responses on a modified version of the Eating Attitudes Test (EAT). Clinically these patients had more visits to a physician per year and more complaints per visit, but these differences were not statistically significant. Over 10.9 percent of the sample population appeared to fulfill the criteria for the eating disorder bulimia. These patients were also significantly heavier than patients who did not have abnormal eating concerns and habits.

Along with anorexia nervosa, bulimia is one of the most prevalent eating disorders in the United States. Bulimia has only recently been recognized as a disease, however, and much remains to be elucidated about this problem. Little is known about its etiology and epidemiology. Bulimia often escapes detection at the primary care level. This study was undertaken to explore the incidence of bulimia in family practice patients and to identify clinical conditions predictive of a diagnosis of bulimia.

Bulimia is a relatively recently acknowledged

psychiatric disorder. Garner and Garfinkel<sup>1</sup> defined bulimia as "episodes of excessive ingestion of large quantities of food that the patient viewed as ego-alien and beyond her control."

Although bulimia also exists as a separate disorder, it has been most extensively studied in a distinct subgroup of anorexia nervosa patients. Casper and associates<sup>2</sup> estimated that 47 percent of their anorectic patients resorted to bulimia, and Garfinkel et al<sup>3</sup> estimated that 50 percent of their patients did so.

However, bulimia is clearly not confined to anorexia nervosa patients. The condition was first described in obese patients,<sup>4</sup> and Wermuth et al<sup>5</sup> reported more bulimic behavior in overweight than in normal-weight patients. The *Diagnostic and Statistical Manual of Mental Disorders, Third Edition* (DSM-III)<sup>6</sup> criteria classify bulimia and anorexia nervosa as mutually exclusive diagnoses (Table 1). Community studies confirm that anorexia nervosa and bulimia may occur independent-

---

From the Department of Psychiatry and the Department of Family Practice, College of Medicine, University of Iowa, Iowa City, Iowa. At the time this paper was written Heidi Zinkand was a second-year medical student, College of Medicine, University of Iowa, Iowa City, Iowa. Requests for reprints should be addressed to Dr. Remi J. Cadoret, Department of Psychiatry, University of Iowa, Iowa City, IA 52242.

**Table 1. DSM-III Criteria for Bulimia<sup>6</sup>**

<p>Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discrete period of time, usually less than two hours)</p> <p>At least three of the following:</p> <ol style="list-style-type: none"> <li>1. Consumption of high-caloric, easily ingested food during a binge</li> <li>2. Inconspicuous eating during a binge</li> <li>3. Termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting</li> <li>4. Repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics</li> <li>5. Frequent weight fluctuations of greater than ten pounds due to alternating binges and fasts</li> </ol> <p>Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily</p> <p>Depressed mood and self-deprecating thoughts following eating binges</p> <p>Bulimic episodes that are not due to anorexia nervosa or any known physical disorder</p>
---

ly of each other, and suggest that many typical cases remain undetected.<sup>7</sup>

Although the incidence of anorexia nervosa has been extensively studied, few studies have investigated the incidence of bulimia. The emerging picture, however, suggests that bulimia may be a substantially more prevalent disorder. Results of a recent study at a small liberal arts college indicated that 13 percent of the students experienced all of the major symptoms of bulimia as defined in the DSM-III criteria.<sup>8</sup> Bulimia was more prevalent in the female population (19 percent) than in the male (5 percent), and also was more prevalent in mildly overweight students or in those in the upper limits of a normal weight range.

As Johnson and Sinnott<sup>9</sup> pointed out, physicians may have difficulty arriving at the diagnosis of bulimia for several reasons. First, nutrition and eating behavior are often issues to which little attention is paid. Second, patients tend to be secretive and ashamed about their behavior. Third, the

self-deprecatory thoughts and depressed mood that are components of the disease can be misinterpreted as other psychiatric problems.

Although frequent weight fluctuation is the only known clinical sign of bulimia, the accompanying self-induced vomiting and laxative and diuretic abuse may lead to a variety of complications. Electrolyte imbalance, particularly hypokalemia, is the most serious. Dehydration, myenteric damage, enlargement of the parotid glands, and erosion of the dental enamel have been cited as consequences of the disorder.

## Methods

The sample population consisted of 176 patients aged between 14 and 42 years who were seen in the model office of the University of Iowa Department of Family Practice during a seven-week period of data collection. Patients aged between 14 and 42 years who were not visiting the clinic for the first time were approached while in the waiting room and asked to participate in the study. The study was briefly explained to each patient, and a description of the project and a consent form emphasizing the confidential and voluntary nature of the project accompanied each questionnaire. The investigator was able to speak with about 70 percent of the patients, and of these, approximately 95 percent completed and returned the questionnaire. In the sample population of 176 patients, 136 (78 percent) were women and 40 (22 percent) were men.

Patients were given a modified version of the Eating Attitudes Test designed by Garner and Garfinkel.<sup>1</sup> The Eating Attitudes Test (EAT) is an objective, self-report instrument originally designed as a 40-item questionnaire to measure a broad range of symptoms characteristic of both "restrictive" and bulimic types of anorexia nervosa. Its reliability as a screening device for detecting patients with abnormal eating concerns in previously undiagnosed cases has been validated in a number of studies.<sup>1,10,11</sup> An abbreviated 26-item version of the EAT (EAT-26) was then proposed and validated by Garner et al<sup>12</sup> based on a factor analysis of the EAT-40. Three factors form subscales that are meaningfully related to bulimia: weight, body-image variables, and psychological

symptoms. The EAT-26 was modified for this study by the addition of 11 questions that dealt with bingeing and other behavior seen in bulimic patients. The final two-page questionnaire consisted of 37 multiple-choice questions. For each question the prevalence of the behavior or attitude referred to was indicated by one of six response choices ranging from "never" to "always."

In analyzing the data, attention was first focused on bingeing behavior. The sample population was broken down into three groups: those who replied that they had never gone on eating binges because they felt they might not be able to stop, those who rarely did so, and those who did so more often. The answers of the "often" group to the six questions were significantly different from those of both the "rarely" and "never" groups. These questions indicated abnormal attitudes toward body weight and eating and certain features common to bulimia, namely, bingeing behavior, tendency for depression after binges, and feelings that food controlled the patient's life. The answers to these questions provided a basis on which to divide the entire sample population: a positive group of those with these abnormal eating habits and attitudes, and a negative group. The answers to these six questions were assigned values of 1 to 6, with the answer "never" assigned a value of 1, "rarely" a value of 2, on up to "always" with a value of 6. The scores for the six questions were summed for each individual and tallied for each group. For those who never binged, 97.1 percent of the summed scores had values of less than or equal to 18 (mean, 10.2), and 87.0 percent of those who often binged had scores of over 18 (mean, 24.3). By selecting those who both rarely or often went on eating binges and who scored high on these abnormal eating characteristics (a score of 18 or above on the six questions), a positive group of 35 individuals with eating abnormalities was defined. The remaining patients composed the negative group ( $n = 141$ ).

With the sample population divided into two groups, the questionnaire was analyzed again. Two categories of answers were defined: one consisting of the replies "never" and "rarely," the other of replies of "sometimes," "often," "very often," and "always." A two-by-two chi-square analysis was performed on questionnaire items.

To analyze clinical variables, age- and sex-matched controls for each person in the positive

group were chosen from the remainder of the sample population. The medical charts of those patients who had been seen in the clinic for at least six months prior to the study were examined for differences between clinical behavior of the positive group and their age- and sex-matched controls. Clinical variables, such as number of visits per year and number and type of complaints per visit, were determined for positive and control groups. Patient weights were also compared after they had been reduced to percentiles using tables that corrected for height, age, and sex.<sup>13,14</sup>

## Results

The positive group for abnormal eating habits and concerns consisted of 35 individuals (20 percent of the original sample population). Thirty-one (88.6 percent) of the patients were women and 4 (11.4 percent) were men, whereas the original population consisted of 136 (77.3 percent) women and 40 (22.7 percent) men. Twenty-two (16.7 percent) of the women in the study were pregnant, but of these, only three belonged to the positive group. There was no significant difference between the number of pregnant women in the positive and negative groups.

The mean age for all women in the study was 28.2 years, and for all men, 26.5 years. The positive group had a mean age of 27.6 years for women and 24.0 years for men. There was no significant difference between the age distribution in positive and control groups.

The men in the positive group were slightly (although not significantly) taller and significantly heavier than those in the negative group. Of those for whom data were available, the weight by height and age of the men in the positive group averaged in the 87th percentile, whereas the average weight for those in the negative group ranked in the 40th percentile. The small sample size of men in the positive group ( $n = 4$ ) must be kept in mind, however, when evaluating the data. The women showed no real difference in height, but, like the men, those in the positive group were somewhat heavier than those in the negative group, with the positive group having a mean rank in the 60th percentile of weight by height and age as compared with a mean 40th-percentile rank of

women in the negative group. For the purposes of statistical analysis, the male and female populations of each group were combined. A median test was carried out on the percentile ranks of weight, which had been corrected for age, sex, and height. A significant difference between the weights of the positive and negative groups was observed ( $\chi^2 = 7.55$ ,  $df = 1$ ,  $.01 > P > .001$ ). Overall, there is evidence for a difference in weight between positive and negative groups, with the positive group as the heavier population.

In clinical variables, patients in the positive group had a slightly greater number of office visits per year, noted slightly more problems on medical history forms filled out at the first visit, and presented with more complaints per visit, particularly with ill-defined functional somatic complaints and social problems. These differences in clinical behavior were not great enough to be statistically significant, however.

The positive and negative groups displayed pronounced differences in their responses on the questionnaire. As detailed in Table 2, significant differences between groups were observed in answers to a majority of questions. As noted before, all patients in the positive group had a tendency toward bingeing behavior, with 43 percent reporting "rarely" and 57 percent "more often" going on eating binges during which they felt they might "not be able to stop." Although this group reported having a greater "impulse to vomit after meals," and a greater use of diet pills than others in the study, there was no significant difference reported between groups in actual vomiting behavior or in purging behavior such as laxative use. The positive group did, however, engage in dieting behavior much more often than did the negative group.

Although not sufficient to classify members of the positive group as "bulimic," these findings do point to certain similarities between the behavior of members of the positive group and individuals suffering from the eating disorder. Like bulimics, the positive group experienced binge-eating episodes that were often followed by abdominal pain or sleep, and were nearly always followed by depression. Binges tended to occur when others were not around. Over one third of the positive group also experienced frequent weight fluctuations of over ten pounds, thus fulfilling another of the criteria for bulimia as set forth in DSM-III.<sup>6</sup>

The positive group showed not only disturbed eating behaviors but also attitudes toward food and eating that were markedly different from those of the negative group. The positive group was more likely to avoid eating when hungry and to particularly avoid foods with a high carbohydrate content. They had a greater awareness of the caloric content of foods they ate, and nearly all indicated that they thought about burning calories when exercising. These patients felt they gave too much time and thought to food and admitted to preoccupations with the thought of having fat on their bodies and the desire to be thinner. Almost all of them (97 percent) indicated that they were at least sometimes terrified of being overweight. Over 70 percent had a tendency to feel extremely guilty after eating and to feel uncomfortable after eating sweets.

## Discussion

The Eating Attitudes Test was designed as a screening questionnaire to detect anorexia nervosa, both the "restrictive" and bulimic types. Modifications of the EAT for this study targeted behavior typical of persons with bulimia. One of the criteria for bulimia, the patient's awareness of an abnormal eating pattern, was not clearly addressed in the questionnaire. Because of this lack and because the EAT was designed only as a screening device, it would be difficult to assign an actual diagnosis of bulimia on the basis of the questionnaire. It should be considered, however, that bulimia, like many other diseases and disorders, may be accompanied by the patient's denial of the problem. The validity of patient awareness as a criterion for bulimia is being questioned by some investigators.<sup>15</sup>

The abnormal eating attitudes and habits of patients in the positive group show striking similarities to those of bulimics. For reasons noted above, a more thorough investigation would be required to establish the incidence of bulimia within this group. Nonetheless, 19 of the 35 members in this group (54.3 percent, or 10.9 percent of the entire positive group) appear to fulfill the remaining criteria of bulimia. Patients in this study reported a greater amount of bingeing behavior than the purging behavior commonly seen in bulimics. An

**Table 2. Questionnaire Results: Comparison of Positive and Negative Groups**

	Responders Answering "Sometimes" to "Always"	
	Controls (n = 141)	Positives (n = 35)
Defining Variables		
1. Have gone on eating binges where I feel that I may not be able to stop*	2.1	57.1
2. Feel depressed after binge*	12.8	94.8
3. Feel that food controls my life*	10.6	65.7
4. Feel extremely guilty after eating*	18.4	77.1
5. Am terrified about being overweight*	35.5	97.1
6. Am preoccupied with the thought of having fat on my body*	35.5	97.1
7. Am preoccupied with a desire to be thinner*	49.7	94.3
Significant Variables		
8. Find myself preoccupied with food*	39.7	77.1
9. Eat diet foods*	32.6	68.8
10. Give too much time and thought to food*	28.4	85.7
11. Engage in dieting behavior*	44.7	88.6
12. Weight often fluctuates more than ten pounds (within the period of a few months)*	9.9	37.1
13. Currently use diet pills*	1.4	17.1
14. Tend to binge when others are not around*	16.3	88.6
15. Tend to binge on junk food or sweets*	19.9	71.4
16. Have abdominal pain after binge*	4.9	42.9
17. Tend to sleep after binge*	8.5	48.6
18. Think about burning up calories when I exercise*	63.1	97.3
19. Feel uncomfortable after eating sweets**	36.9	71.4
20. Suffer from constipation**	26.2	54.3
21. Feel that others pressure me to eat**	19.9	45.7
22. Like my stomach to be empty**	40.4	68.6
23. Feel relieved after binge**	7.8	25.7
24. Avoid eating when I am hungry***	28.4	54.3
25. Am aware of the caloric content of foods that I eat***	67.4	88.6
26. Particularly avoid foods with a high carbohydrate content (eg, bread, potatoes, rice)***	36.9	60.0
27. Other people think that I am too thin***	26.2	8.6
28. Have the impulse to vomit after meals***	4.3	14.3
29. Enjoy trying new rich foods***	84.4	68.6
Insignificant Variables		
30. Display self-control around food	92.2	82.9
31. Take longer than others to eat my meals	47.5	60.0
32. Take laxatives		
33. Avoid foods with sugar in them	5.7	11.4
34. Presently use water pills (diuretics) for weight reduction	2.1	5.7
35. Cut my food into small pieces	63.8	54.3
36. Feel others would prefer that I eat more	22.0	14.3
37. Vomit after I have eaten	5.7	5.7
*P < .0001 **P < .0030 ***P < .0320		

absence of vomiting or laxative abuse does not necessarily rule out the presence of bulimia. Some bulimics compensate for binges, not by such purges, but by periods of strict dieting or fasting. Since the data in the study are based on self-report, not on direct observation, the actual incidence of such behavior is unknown. It is possible that patients view the purging behavior as more abnormal and thus are more reluctant to admit to such activity.<sup>16</sup>

Not surprisingly, the patients in the positive group of this study showed similarities to populations of other studies dealing with eating disorders. A greater percentage of women than men in the sample population fell into the positive group. Results of the study support the observation that bulimia is more prevalent in individuals who are in the upper limits of the normal weight range. This finding should be tempered by the fact that some traits measured by the questionnaire might be characteristic of individuals who are or have been overweight, and could also represent common traits shared between bulimia and obesity. This study also confirms the independence of bulimia and anorexia nervosa, since none of the individuals in the positive group showed signs of anorexia nervosa.

Bulimia represents a diagnostic problem for physicians because of the often normal body size of patients and the secretive nature of their behavior. The results of this study suggest that there remains a substantial proportion of patients whose eating abnormalities go undetected. Of the 35 patients in the positive group, the medical records of only four contained any reference to the patient's eating patterns: 2 mentioned obesity, 1 noted a past history of bulimia, and 1 contained a referral to the self-help group Overeaters Anonymous. Because patients are reluctant to bring up the problem and their clinical behavior is not significantly different from that of controls, it becomes obvious that this potentially important clinical condition is easily overlooked.

The results of this paper suggest that a simple screening questionnaire could be used for detection. In this study positive answers to questions 1 through 7 in Table 2 indicate individuals with abnormal eating concerns, including bulimia. Such questions could be added to a health history questionnaire generally used in primary care offices and would serve to raise the suspicions of the

physician to pursue the diagnosis of bulimia and initiate appropriate treatment. The physician should be aware of various treatment modalities, as well as the existence of self-help groups such as Overeaters Anonymous, to provide bulimic patients with the understanding and support needed to deal with this problem.

### Acknowledgment

Research for this project was sponsored by the National Institutes of Health Grant for Summer Research Assistants Fellowship No. RR05372.

### References

1. Garner DM, Garfinkel PE: Socio-cultural factors in the development of anorexia nervosa. *Psychol Med* 10:647, 1980
2. Casper RC, Elke DE, Halmi KA, et al: Bulimia: Its incidence and clinical importance in patients with anorexia nervosa. *Arch Gen Psychiatry* 37:1030, 1980
3. Garfinkel PE, Moldofsky H, Garner DM: The heterogeneity of anorexia nervosa. *Arch Gen Psychiatry* 37:1036, 1980
4. Stunkard AJ: Eating patterns and obesity. *Psychiatr Q* 33:284, 1959
5. Wermuth BM, Davis KL, Hollister LE, et al: Phenytoin treatment of the binge-eating syndrome. *Am J Psychiatry* 134:1249, 1977
6. Diagnostic and Statistical Manual of Mental Disorders, ed 3. Washington, DC, American Psychiatric Association, 1980
7. Fairburn C: A cognitive behavioural approach to the treatment of bulimia. *Psychol Med* 11:707, 1981
8. Halmi KA: Anorexia nervosa and bulimia. *Psychosomatics* 24:111, 1983
9. Johnson RE, Sinnott SK: Bulimia. *Am Fam Physician* 24:141, 1981
10. Button EJ, Whitehouse A: Subclinical anorexia nervosa. *Psychol Med* 11:509, 1981
11. Thompson MG, Schwartz DM: Life adjustment of women with anorexia nervosa and anorexic-like behavior. *Int J Eating Disorders* 1:47, 1982
12. Garner DM, Olmsted MP, Bohr Y, et al: The Eating Attitudes Test: Psychometric features and clinical correlates. *Psychol Med* 12:871, 1982
13. Height and weight of youths 12-17 years: United States. In National Center for Health Statistics (Rockville, Md): Data from the National Health Survey, series 11, No. 124. DHEW publication No. (HSM) 73-1606. Government Printing Office, 1973, p 54
14. Weight by height and age for adults 18-74 years: United States, 1971-1974. In National Center for Health Statistics (Rockville, Md): Data from the National Health Survey, series 11, No. 208. DHEW publication No. (PHS) 79-1656. Government Printing Office, 1979, p 18
15. Johnson R, Sinnott S: Bulimia: A pilot study of a sorority. Presented at the North American Primary Care Research Group Annual Meeting, Lake Tahoe, Nevada, March 18-20, 1981
16. Mitchell JE, Pyle RL, Eckert ED: Frequency and duration of binge-eating episodes in patients with bulimia. *Am J Psychiatry* 138:835, 1981