

## The Prevalence of Bulimia among College Students

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**Abstract:** A survey was conducted to determine the prevalence of bulimia and bulimic symptoms in a nonclinical sample of 907 college freshmen and seniors. Using criteria based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4 per cent of the women and 0.4 per cent of the men were classified as bulimic. Symptoms of bulimia, such as binge eating, purging behaviors, and extreme fear of gaining weight, were much more prevalent. (*Am J Public Health* 1986; 76:1135-1137.)

### Introduction

Despite insufficient epidemiological data, there have been recent references to an "epidemic" of the bingeing/purging eating disorder known as bulimia among young women.<sup>1-3</sup> Several studies have attempted to operationalize the criteria for bulimia outlined in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-III), for use in questionnaire surveys. Unfortunately, the DSM-III criteria do not specify a required frequency of eating binges, or exactly what amount of food consumption qualifies as a binge. Differences in interpretation of these criteria probably account for varying prevalence rates in the few studies that have been conducted.

Halmi and her colleagues<sup>4</sup> reported a 13 per cent prevalence rate for bulimia among 355 summer students at a state university: anyone who agreed with a statement that he or she had ever binged on "an enormous amount of food in a short space of time" satisfied the criteria for binge eating.

Three studies of college women that used DSM-III criteria for bulimia and specified bingeing frequency, found that 4-5 per cent of the women were bulimic.<sup>5-7</sup> An additional 3-4 per cent satisfied many but not all of the criteria for bulimia.<sup>6,7</sup> In one of these studies, 0.5 per cent of the men were bulimic, and an additional 0.5 per cent were classified as bulimic using less frequent bingeing criteria.<sup>7</sup>

Based on a large, random sample of college students, and using a classification scheme that corresponds closely to the DSM-III, the present study was designed to assess the prevalence of bulimia and bulimic symptomatology.

### Method

#### Sample and Procedure

In the spring of 1982, questionnaires were mailed to a randomly selected sample of 400 women and 200 men from

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each of the freshmen and senior classes of a New England college with high scholastic admission standards. Students completed the questionnaire on a confidential, volunteer basis. The response rate was 75 per cent, resulting in a final sample of 631 women and 276 men.

In terms of their demographic background, the students are representative of their college and of undergraduates at similar schools.<sup>8</sup> Virtually all of the students are single and 80 per cent are White.

### Instrument

The questionnaire included demographic background, weight, 26 items from the Eating Disorder Inventory,<sup>9</sup> and numerous other items. Only those items most relevant to bulimia will be presented here.

Students were classified as bulimic based on responses to questionnaire items corresponding to the DSM-III definition (see Appendix). An average frequency of at least once-a-week bingeing was required; binges had to consist of at least moderately large amounts of high calorie food (about 1,000 calories). Students who showed evidence of anorexia were excluded.

### Results

#### Weight

The mean height and weight for the sample is 5'5" and 128 lbs for women and 5'11" and 161 lbs for men. Only 10 per cent of the women and 11 per cent of the men are overweight, based on American College Health Association data for college students<sup>10</sup>; but, when asked to evaluate their current weight, 50 per cent of the women and 13 per cent of the men categorized themselves as "overweight" (95 per cent CI: 30-44 per cent). In addition, 28 per cent of the women and 7 per cent of the men stated that they were "often", "very often", or "always" "terrified of gaining weight" (95 per cent CI: 15-27 per cent).

#### Binge-eating and Purging

Students were asked whether they binged, and if so, how often. They specified the amounts and types of food they consumed during a typical binge. We excluded "binges" that consisted of balanced meals, small amounts of food, or food that was not high in calories. For example, some students referred to a bowl of ice cream or four to six cookies as a binge. While such rigid views of eating may be indicative of problems, we did not want to categorize these students as bulimic. According to our criteria, 23 per cent of the women and 14 per cent of the men reported eating binges at least once each week on the average (95 per cent CI: 4-14 per cent).

Twenty-three per cent of the women and 9 per cent of the men report using one or more of the following four methods of weight control: fasting, diuretics, laxatives, or self-induced vomiting (see Table 1) (95 per cent CI: 8-20 per cent).

**TABLE 1—Compensatory Weight Loss Methods Used by Respondents According to Sex and College Class**

Respondents	Fasting*			Diuretics			Laxatives			Vomiting		
	% Never	% In Past, Not Now	% Current	% Never	% In Past, Not Now	% Current	% Never	% In Past, Not Now	% Current	% Never	% In Past, Not Now	% Current
Senior Women (N = 320)	58	26	16	94	4	3	93	5	2	89	8	3
Freshman Women (N = 305)	54	20	25	97	2	1	93	4	3	89	10	2
Senior Men (N = 134)	80	13	8	99	0	1	99	0	1	99	2	0
Freshman Men (N = 137)	81	9	10	99	1	0	100	0	0	96	4	0

\*Fasting includes "severely limiting" food intake.

When asked how worried they felt about their eating binges, 26 per cent of the female bingers and 5 per cent of the male bingers described themselves as very or extremely worried (4–5 on a five-point scale) (95 per cent CI: 9–33 per cent). Similarly, 28 per cent of the female bingers and 11 per cent of the male bingers feel their binge eating is "out of control" (1–2 on a five-point scale) (95 per cent CI: 5–29 per cent).

**Bulimic Patterns**

Using our operational definition of bulimia (see Appendix), 8 per cent of the women and 0.7 per cent of the men are classified as bulimic (95 per cent CI: 3–11 per cent). To maximize comparability with other recent studies, a second prevalence rate was computed for students who reported bingeing more than once a week. Four per cent of the women and 0.4 per cent of the men were classified as bulimic using that stricter criterion (95 per cent CI: –1–9 per cent).

*Discussion*

Using rigorous DSM-III criteria, 8 per cent of college women and .7 per cent of college men are classified as

bulimic. The figures are halved when more stringent frequency criteria for binge-eating are used. These prevalence statistics are very similar to those found in other studies of college women<sup>5-7</sup> and men.<sup>7</sup>

The results also suggest that eating disorders among college students should be conceptualized as a continuum of behaviors and attitudes. Focusing exclusively on bulimia would ignore the potentially maladaptive difficulties with eating, weight, and body image that appear to be relatively common among college students, particularly women. Such attitudes are exemplified by the number of normal-weight women who believe they are overweight, their extreme fear of gaining weight, their concerns about their bingeing, and the severe restrictions on eating suggested by the labeling of four to six cookies as a binge.

Overall, the results of this study indicate that bulimia is less prevalent than some researchers and clinicians have suggested, but that bulimic symptoms represent a substantial problem among college students, especially women. It is therefore crucial to focus research attention on nonclinical adolescent populations, to learn more about the causes and development of a broad range of eating problems among young women and men.

**APPENDIX**  
Diagnostic Criteria for Bulimia

DSM-III	Current Study
A) Recurrent episodes of binge eating (rapid consumption of a large amount of food in a discreet period of time, usually less than two hours).	1) Binge eating episodes: at least one a week, on the average.*
B) At least three of the following:	2) Binges must consist of large amounts of high-calorie food, not just large meals. If amounts of food are specified, it must be at least 1,000 calories.
1) consumption of easily-ingested, high-calorie food during a binge;	3) At least some of the binges must occur while the subject is alone.
2) inconspicuous eating during a binge;	4) Subject must make repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or the use of cathartics or diuretics.
3) termination of such eating episodes by abdominal pain, sleep, social interruption, or self-induced vomiting;	5) The eating binges are experienced as being out of control: 1–2 on a 5-point scale ranging from out of control (1) to in control (5).
4) repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or use of cathartics or diuretics;	6) Subject reports feeling extremely guilty after overeating—at least often.
5) frequent weight fluctuations of greater than 10 lbs, due to alternating binges and fasts.	7) Weight has not fallen more than 20 per cent below normal range since age 16.
C) Awareness that the eating pattern is abnormal and fear of not being able to stop eating voluntarily.	
D) Depressed mood and self-deprecating thoughts following eating binges.	
E) The bulimic episodes are not due to anorexia nervosa or any other known eating disorder.	

\*Since fractions are rounded up, any response between once every 4–14 days is rounded to one a week.

## REFERENCES

- Schwartz D, Thompson M, Johnson C: Anorexia nervosa and bulimia: the socio-cultural context. *Int J Eating Disorders* 1980; 3:20-36.
- Brody JE: An eating disorder of binges and purges reported widespread. *New York Times*. October 20, 1981 C1, C5.
- Hinds K: Bulimia. *The Brown Alumni Monthly*. 1982 (September); 24-28.
- Halmi KA, Falk JR, Schwartz E: Binge-eating and vomiting: a survey of a college population. *Psychol Med* 1981; 11:697-706.
- Hart KJ, Ollendick TH: Prevalence of bulimia in working and university women. *Am J Psychiatry* 1985; 142:851-854.
- Katzman MA, Wolchik SA, Braver SL: The prevalence of frequent binge eating and bulimia in a nonclinical college sample. *Int J Eating Disorders* 1984; 3:53-62.
- Pyle RL, Mitchell JE, Eckert ED, Halvorson PA, Neuman PA, Goff GM: The incidence of bulimia in freshman college students. *Int J Eating Disorders* 1983; 2:75-85.
- Zuckerman DM: Confidence and aspirations: self-esteem and self-concepts as predictors of students' life goals. *J Pers* 1985; 53:543-560.
- Garner DM, Olmstead MP, Polivy J: Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *Int J Eating Disorders* 1983; 2:15-34.
- Sargent DW: Weight-height relationship of young men and young women. *Am J Clin Nutr* 1963; 13:318-325.

## Amebic Infections in Asymptomatic Homosexual Men, Lack of Evidence of Invasive Disease

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**Abstract:** A survey for enteric infections in 140 asymptomatic homosexual men who attended a community clinic revealed a high prevalence of infection with *Entamoeba histolytica* (27.1 per cent) and *Giardia lamblia* (15.7 per cent). In contrast, the prevalence of elevated indirect hemagglutination (IHA) titers ( $\geq 1:128$ ), which indicate invasive amebiasis, was low (5.7 per cent). Our findings suggest that only a limited amount of invasive amebic disease is occurring in this group of homosexual men. (*Am J Public Health* 1986; 76:1137-1139.)

### Introduction

Several surveys in selected homosexual male population groups have revealed high rates of infection with *Entamoeba histolytica*.<sup>1-6</sup> However, despite its capacity to invade tissue, asymptomatic infection with this protozoan is common, and the presence of the organism in stool does not necessarily indicate a pathologic process. Therefore, stool surveys alone may not give an accurate measure of the public health impact of amebiasis in a community. In an effort to estimate the level of invasive amebiasis in homosexual men in Los Angeles and to measure the prevalence of enteric infections, a survey was conducted in the spring of 1982.

### Methods

One hundred forty homosexual males from one large clinic in Los Angeles County were enrolled in the study. Every fifth patient for a period of approximately three months was invited to enroll in the survey. Persons with

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symptoms of gastrointestinal illness were excluded from the study.

Three stool specimens were obtained a minimum of 48 hours apart and were collected in polyvinyl alcohol preservative. The formalin-ethyl acetate concentration procedure was employed and wet mount preparations were then examined. A stained smear was also prepared by a modification of the Gomori-Trichrome method. Unpreserved portions of the third stool specimen were cultured for *Salmonella*, *Shigella*, *Campylobacter*, and enteroviruses as well as evaluated for the presence of rotavirus. A single blood specimen was obtained from each patient and sera were evaluated by indirect hemagglutination (IHA) for antibodies to *E. histolytica* by the Division of Parasitic Diseases Laboratory of the Centers for Disease Control.<sup>7</sup>

Data regarding age, ethnicity, occupation, number of sexual partners per month, type and frequency of sexual contact, and history of sexually transmitted and enteric disease were obtained from each participant.

### Results

The survey population ranged in age from 18 to 58 (median = 29.5) years of age. Ethnic distribution was White (78.6 per cent), Latino (13.6 per cent), Black (4.3 per cent), and other/unknown (3.6 per cent). The average number of sexual partners per month was 4.5 (range 1-80). A history of gonorrhea was reported by 79 per cent and of syphilis by 40 per cent of the population studied.

TABLE 1—Prevalence of Protozoal Infections in Homosexual Men, Los Angeles, 1982 (N=140)

Organism	# %
<b>Pathogens</b>	
<i>Entamoeba histolytica</i>	38 (27.1)
<i>Giardia lamblia</i>	22 (15.7)
<i>E. histolytica</i> or <i>G. lamblia</i>	54 (38.6)
<i>E. histolytica</i> and <i>G. lamblia</i>	7 (05.0)
<i>Dientamoeba fragilis</i>	4 (02.9)
<b>Nonpathogens</b>	
<i>Endolimax nana</i>	77 (55.0)
<i>Entamoeba coli</i>	55 (39.3)
<i>Entamoeba hartmanni</i>	41 (29.3)
<i>Iodamoeba butschlii</i>	24 (17.1)
<i>Chilomastix mesnili</i>	2 (01.4)