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Eating Disorder Symptomatology: Prevalence among Latino College Freshmen Students

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Abstract

Objective—This study investigated the prevalence of eating disorder symptoms in first-year students at the University of Puerto Rico.

Method—Responses to the Bulimia Test Revised (BULIT-R), the Eating Attitudes Test (EAT-26), and the Beck Depression Inventory (BDI) were analyzed in a sample of 2,163 freshman students.

Results—The percentage of students at or above the clinical cut-off points was 3.24% for the BULIT-R, 9.59% for the EAT-26 and 1.88% met the cut-off point for both instruments. The 36.44% of the students who screen positive on eating disorders measures scored 18 or more on the BDI and 5.93% on this group presented high suicidal risk based on their responses to BDI items assessing suicidal thoughts.

Discussion—Eating disorder symptoms occur frequently in Puerto Rican college students, and prevention, detection, and treatment efforts are needed.

Keywords

Eating disorders; Latinos; Prevalence; Bulimia nervosa; Anorexia Nervosa; Depression

Introduction

Eating disorders are characterized by clinically significant disturbances in body image and eating behaviors (Smolak & Striegel-Moore, 2001). The lifetime estimated prevalence in females for anorexia nervosa (AN) ranges from 0.6% to 4.0% and from 1.2% to 5.9% for bulimia nervosa (BN) (Hudson, Hiripi, Pope, & Kessler, 2007). Although AN and BN are more prevalent in females than males, this discrepancy is smaller for sub-threshold binge eating disorder (BED) (0.6% women and 1.9% men) and for any binge eating (4.9% women and 4.0% men) (Hudson, Hiripi, Pope, & Kessler, 2007).

Most studies that have evaluated the prevalence and treatment of these disorders have focused primarily on non-minority populations. Therefore, theoretical models, interventions, and instruments have been developed based on particularities of Western culture (Smolak & Striegel-Moore, 2001). The dearth of comprehensive data regarding eating disorders in ethnically diverse samples has perpetuated the misperception that ethnic minority girls and women do not experience symptoms of eating disorders (Smolak & Striegel-Moore, 2001). However, community and college student studies reveal that eating disorders do exist among minority groups (Cachelin, Rebeck, Veisel & Striegel-Moore, 2001; Franko, Becker, Thomas & Herzog, 2007).

The available data on Latinos (Gentile, Raghavan, Rajah & Gates, 2007; Granillo, Jones-Rodriguez, & Carvajal, 2005; Hiebert, Felice, Wingard, Muñoz & Ferguson, 1988; Pumariega, 1986; Santos, 1996) reveal that the prevalence of BN is similar to that reported in Caucasian samples, although awareness of this research is limited. Early studies of adolescents documented that prevalence of disordered eating behaviors is similar in Hispanic and Caucasian youth (Lachenmeyer & Muni-Brander, 1988; Smith & Krejci, 1991; Snow & Harris, 1989) and Hispanic, Asian- American, and Native- American girls tended to report similar or even greater concerns and behaviors than white adolescent girls (Neumark-Sztainer, Croll, Story, Hannan, French & Perry, 2002). Granillo and colleagues (2005) analyzed data from the Add Health study to estimate the occurrence of eating disorders and body image disturbances in a sample of Latina adolescents. For all Latinas, 2.5% reported a body mass index (BMI) of 17 kg/m² or lower, 5.5% reported amenorrhea, 53.3% reported current dieting, and 1.9% reported bulimic symptomatology. Compared with the non-Latina Add Health participants, Latinas were less likely to be low weight, had higher dietary restraint, and were similar in rates of amenorrhea and bulimic symptomatology.

Recently, Alegría and collaborators (2007) conducted a survey study with Latinos ages 18 and older living in the United States (U.S.). The sample consisted of 2,554 (1,127 men and 1,427 women) English- and Spanish-speaking adults from various ethnic backgrounds. The authors reported an estimated lifetime prevalence of 0.08% for AN, 1.61% for BN, 1.92% for BED, and 5.61% for any binge eating. The twelve-month prevalence estimates were 0.03% for AN, 0.82% for BN, 0.90% for BED, and 2.73% for any binge eating. Regarding sex, the lifetime prevalence of any binge eating was 5.43% for men and 5.80% for women and for BN were 1.34% for men and 1.91% for women.

Additionally, studies of college students indicate that the prevalence of eating disorders is similar or greater in Latina populations than in white populations. For example, data from the National Eating Disorders Screening Program, conducted on over 600 college campuses in the U.S., found that self-reported eating disorder symptoms were higher in Latino/a students than in African- American, Asian, and white students. Moreover, Latino/a participants were significantly less likely to be referred for further evaluation than were white participants (Becker, Franko, Speck, & Herzog, 2003; Franko, Becker, Thomas & Herzog, 2007).

Eating disorders on college campuses represent a serious, yet understudied mental health issue (Hoyt & Ross, 2003). The college population is at elevated risk for eating disorders due to age-related, developmental, and environmental factors (Hoyt & Ross, 2003). Recent data indicate a high prevalence of eating disorders among women enrolled in colleges and universities throughout the U.S. An estimated 1–4% meet the full DSM-IV criteria for AN, and an additional 35–70% report behaviors or symptoms that increase the risk of eating disorders (Hoyt & Ross, 2003). Studies of eating disorders in college student populations are a key element in the process of raising awareness about the disorders, which may result in the development of effective diagnosis and treatment. It is also important to note that prevalence studies conducted on college campuses with diverse samples are few in number (Aruguete, DeBord, Yate & Edman, 2005; Hoerr, Bokran, Lugo, Bivins & Keast, 2002; Mintz, O'Halloran, Mulholland & Schneider, 1997). A recent study underscores the need to examine eating disorders in Latino/a samples. Gentile, Raghavan, Rajah and Gates (2007) conducted a survey in a diverse ethnic freshmen student sample (45.8% Hispanic or Latino/a; 24.5% African American/Afro-Caribbean; 19.4% white) and found that the Latino/a group was more likely to report an eating disorder (12.6%) than the African American/Afro Caribbean group (5.0%) or whites (6.1%).

Sex differences reporting greater eating concerns in women than men are well documented, but a recent study of undergraduate students found that although women were 2.3 times more likely than men to report compulsive eating (Guidi, Pender, Hollon, Zisook, Schwartz, Pedrelli, et al., 2009), men were more likely to engage in compulsive exercise (23.4%) than women (13.4%). Moreover, a full 20% of male collegiate athletes reported having eating disturbances including binge eating, use of laxatives, diuretics and self induced vomited (Petrie, Greenleaf, Reel & Carter, 2009). These data suggest the importance of including men in epidemiologic studies of eating disturbances.

Eating disorders are associated with depression, low self-esteem, anxiety, perfectionist and obsessive-compulsive traits, disturbances in social functioning (Blinder, Camella & Sanathara, 2006; Kaminska & Rybakowski, 2006; Muuss, 1986; Woodside & Stab, 2006), and suicide attempts (Franko & Keel, 2006). The comorbidity between eating and mood disorders has important implications for assessment and treatment and has rarely been studied with minority samples (Franko & Striegel-Moore, 2002; Franko, Striegel-Moore, Bean, Tamer, Kraemer, et al., 2005).

The primary objective of this investigation was to conduct the first study of the prevalence of eating disorder symptoms in freshmen students at the University of Puerto Rico. The second objective was to evaluate depressive symptoms in the sample. The research questions were: (1) What is the prevalence of clinically significant eating disorder symptoms and behaviors in first year college students in Puerto Rico?; (2) How do participants in the eating disorder symptom group (those scoring above the cut-off on both or either screening measures of eating disorders) and the referent group (those scoring below the cut-off on screening measures of eating disorders) differ in regard to eating behaviors, depressive symptoms, weight, and BMI; and (3) How do men and women differ in regard to eating disorder behaviors?

Method

Participants

The sample consisted of 2,163 freshman students (1,429 women and 722 men) from nine of the eleven campuses that comprise the University of Puerto Rico system. The University of Puerto Rico is a public system made up of eleven campuses distributed throughout Puerto Rico, including metropolitan and rural areas. The University of Puerto Rico community is

composed of 67,053 students. The study sample was composed of freshman students from the academic years 2004–2005 and 2005–2006. The mean age of the students was 18.26 years ($SD = 1.27$). Puerto Ricans comprised 92.9% of the sample with the remaining 7.1% representing other ethnicities.

Instruments

Two self-report eating disorders screening questionnaires and one self-report depression measure are available to be used with the Puerto Rican population. Each measure has been translated into Spanish and adapted for Latinos to maintain the cultural equivalence between the English and the Spanish versions (Lebrón, & Reyes 1997). A culturally sensitive framework was used to evaluate the equivalence on five domains areas: semantic, content, technical, construct and criterion (Matias-Carrelo, Chavez, Negron, Canino, Aguilar-Gaxiola, & Hoppe, 2003).

To screen for eating disorders we selected the Bulimia Test-Revised (BULIT-R; (Thelen, Farmer, Wonderlich, & Smith, 1991) to identify BN symptoms. We also included the Eating Attitudes Test (EAT-26; Garner, & Garfinkel, 1979) to evaluate characteristics associated with AN. Precedent for using both instruments simultaneously exists (Gleaves, Lowe, Snow, Green & Murphy-Eberenz, 2000; Russell & Keel, 2002) because the EAT-26 is more accurate than the BULIT-R at detecting restricting and dieting behaviors and the BULIT-R is more accurate at detecting bulimia-related behaviors.

The BULIT-R is a 28-item self-report questionnaire that assesses binge eating and purging based on the DSM-III-R criteria for BN (Thelen, Farmer, Wonderlich & Smith, 1991). The BULIT-R has demonstrated validity with both clinically identified bulimic populations and with non-clinical college female populations (Hawkins & Clement, 1980). This instrument has been found to be reliable when used with Latinos (Reyes-Rodríguez, 1997; Santos, 1996). The Spanish version of the BULIT-R was used in the present study and one item was added to evaluate the self-evaluation influenced by body, shape, and weight based on the DSM-IV criteria; however, this item was not included in the score to maintain the equivalence with the original English version (Lebrón & Reyes, 1997). The Spanish version of the BULIT-R has an internal reliability index of 0.96, using Cronbach's alpha. The test re-test reliability of the BULIT-R was reported to be 0.92 (Reyes, 2005). In the present study, the BULIT-R had a Cronbach's alpha index of 0.91. A cut-off point of 85 is suggested to indicate symptoms of clinical concern in the original version (Thelen, Farmer, Wonderlich & Smith, 1991). In the present study we used the cut-off point of 91 as suggested in the cultural adaptation and validation of the BULIT-R in the Puerto Rican college sample (Reyes, 2005).

The EAT-26 is a shortened version of the EAT-40, an objective self-report measure of AN symptoms. This instrument has been validated with AN patients, but it has also been useful for the identification of subjects with different levels and type of eating disturbances (Koslowsky, Scheinberg, Bleich, Mark, Apter, Danon & Solomon, 1992). The EAT has a three-factor structure: dieting, food preoccupation, and oral control. It consists of 26 items with a 3-point response format that ranges from "always" to "never," with a total possible score ranging from 0 to 78. The EAT-26 has high internal consistency ($\alpha = 0.90$). The Spanish version used in current study yielded a Cronbach's alpha of 0.89 and the test re-test reliability of the EAT-26 was 0.92 (Reyes, 2005). The EAT-26 had an internal reliability index of 0.88 in the current study. Thus, this instrument has adequate reliability when used with Latinos. The cut-off score for the EAT-26 is a total score of 20.

The Beck Depression Inventory (Beck, 1967) is a 21-item self-report instrument that assesses the severity of depressive symptoms (Beck, Rush, Shaw & Emery, 1983; Beck,

Steer & Garbin, 1988). Symptoms include vegetative, mood, and cognitive aspects of depression. High levels of internal reliability and validity have been reported in the United States, Europe, Spain, and other countries (Beck & Beamesderfer, 1974; Beck, Steer & Garbin, 1988; Beck, Weissman, Lester & Trexler, 1974; Vázquez & Sanz, 1991). The BDI has been translated and adapted into Spanish (Bernal, Bonilla & Santiago, 1995) with a sample of Puerto Rican adult outpatients and in a student sample (Bonilla, Bernal, Santos & Santos, 2004). These investigators reported high internal consistency ($\alpha=0.88$) for the BDI (Spanish version). In the current study, the BDI had an internal reliability index of 0.92 using Cronbach's alpha. We used the cut-off point of 18 to indicate depressive symptoms of clinical concern.

In addition to these measures, the study questionnaire included a general information sheet to obtain demographic information, dietary practices, and attitudes regarding weight and stressful life events.

Procedures

The study was coordinated with the Quality of Life Offices at the University of Puerto Rico System. The Human Subjects Research Committee approved the study in September, 2004. Approximately 8,849 freshman students were enrolled at the nine campuses participating in the present study during the academic year 2004–2005. The overall final sample size of all the nine campuses was 2,893 freshman students. Given the survey design, the sample size was selected to adequately represent the entire campus population of first year students.

In order to obtain the sample, we first selected a sample of classrooms and then screened the students in the selected classes. Each classroom represented a sampling cluster. To sample the classrooms, a list of the sections of courses geared toward first-year students on each campus was identified with the help of the Quality of Life Offices and in coordination with the Registrar Offices. From that list, a sample of sections (classrooms), using systematic sampling, was selected, weighting for the number of students in each. We weighted each section for the number of students enrolled because our unit of analysis is the student, not the course sections. This means that larger sections had a higher probability of selection than smaller sections, thus helping to insure that the probability of selection of each student was the same. An over-sampling of sections was made in order to take into account any possible refusals. Once all the sections (classrooms) were selected, the professors were contacted and asked for permission to distribute a self-administered questionnaire to their students. When permission was obtained, interviewers were dispatched and the questionnaire was distributed to all the students in each section.

All of the research staff (research assistants and personnel of Quality of Life Offices) received training on the methodological and ethical aspects of the study. Informed consent was obtained from all participants. Once consent was obtained, the interviewers distributed the questionnaires, read the instructions, and reviewed the definition of binge eating. Students completed the survey during class time. All questionnaires were anonymous and all students received a handout that included referrals for professional services. A waiver for parent authorization was granted by the Human Research Committee.

Data analysis

Original source data were collected via self-report questionnaires and were entered into a SPSS data entry builder's database. SPSS for Windows version 14.0 was used for analyses. Descriptive analyses were conducted to describe the sample in relation to demographic information, eating disorder behaviors, and dieting behaviors. For all statistical tests, *p* values of 0.05 or lower were considered statistically significant. To address our second and

third research questions, we divided the sample into two groups. Participants who met the cut-off points for both or either instruments (BULIT-R or EAT-26) constituted the eating disorders screen positive group [ED Screen (+)] and the second group [ED Screen (-)] included those individuals who scored below the cutoff on both instruments. Two-way ANOVA was used to compare mean BDI scores and BMI controlling for sex across the two groups. The Pearson Chi-Square test was used to evaluate the sex differences between groups. Pearson correlation coefficients were used to evaluate the relation between eating disorder instrument scores and depression.

Results

Participant characteristics

A total of 2,163 individuals participated in the study, which represented a 75% response rate of the target sample (2,893) of enrolled students. Reasons for not obtaining a 100% response rate included: students withdrew from the course selected in the sample, were absent during the administration day, or chose not to participate in the study. The sex distribution in this group was 66.07% (n=1, 429) women and 33.38% (n=722) men. Twelve participants (0.55%) did not report their sex. Ages ranged from 15 to 38 years, with a mean of 18.26 years (SD= 1.26). The majority of the sample was single (93.70%).

Prevalence of eating disorder symptoms

The first research question was to determine the prevalence of clinically significant eating disorder symptoms and behaviors in first year college students in Puerto Rico. Based on data obtained from the General Information Sheet, 32.20% reported that they were currently engaged in dieting with the intention of losing weight. Thirty-three percent (33.00%) considered themselves to be overweight. Just over forty percent (40.10%) admitted to having been on one to three diets in an attempt to lose weight during the previous year. For the total sample, the mean score on the BULIT-R was 49.38 (SD= 17.14) and on the EAT-26 was 8.56 (SD= 8.91). The percentage of students scoring at or above the cut-off points was 3.24% (n=70) for the BULIT-R (3.78% women; 2.23% men). For the EAT-26, 9.59% (n= 206) met or exceeded the cutoff point (11.80% women; 5.05% men). A total of 1.88% (n=40) scored above the cut-off points for both instruments (2.39% women; 0.85% men). Using the data from the BULIT-R, we identified those individuals who reported sufficient symptoms to meet DSM-IV criteria for BN for binge eating (i.e., frequency and three months or more of binge eating) and compensatory behaviors. In the sample, 3.19% (n=69) (3.26% women and 4.40% men) reported sufficient frequency and severity to approximate DSM-IV criteria for BN.

A Pearson Chi-Square Test showed sex differences in the percent distribution of students in the ED Screen (+) and Non-DE groups ($\chi^2(1)=21.84$, $p<0.0001$). See Table 1 for a detailed distribution by sex for the two groups.

BMI, weight, and BDI

We then compared characteristics of individuals who scored above the cut-off on both or either of the screening instruments [ED Screen (+) group] with those who scored below the cut-off on both instruments [ED Screen (-)] in regard to eating behaviors, depressive symptoms, weight, and BMI. Table 1 presents the numbers of individuals who scored above the cut-off points for one or both instruments, by sex. Table 2 compares the screen positive and screen negative groups by sex, on eating disorder measures, BMI, weight, and BDI. In both sexes, the ED Screen (+) group reported higher BDI scores. Scores on the BULIT-R were not significantly different in women (74.54) and men (75.98). However, overall women scored higher on the EAT-26 than men.

Table 3 presents the mean values across two groups by sex for BMI and BDI. The interaction term in the model comparing mean BMI indicates group differences by gender ($p < 0.01$). Multiple comparisons for two groups included a Scheffe adjustment of p-values for both BMI and BDI. The ED Screen (+) group had significantly higher BMI than the ED Screen (-) group for men ($p < 0.001$), but not women ($p = 0.116$).

The interaction term in the model comparing mean BDI indicates no group differences by gender ($p < 0.24$). Women and men in the ED Screen (+) group reported significantly more depression. The difference between women in the ED Screen (+) and ED Screen (-) groups on the BDI was 10.80 points ($p < 0.0001$), whereas the difference between men in the ED Screen (+) and the ED Screen (-) group was 9.1 points ($p < 0.0001$). Regardless of sex, the ED Screen (+) group reported higher BDI scores than the ED Screen (-) group.

Eating behaviors

We then examined differences between the sexes in relation to eating disorder behaviors reported on the BULIT-R and EAT-26 (Table 4). Overall, in both groups [ED Screen (+) and Screen (-)], disturbed eating patterns were more prevalent in men than women. However, women reported engaging in more dieting behaviors (74.47%) than men (65.22%). First, comparing men and women in the ED Screen (+) group, men reported more frequent binge eating than women [more than once per week: women (21.81%); men (30.43%)] and men (26.09%) reported vomiting more than once per month more frequently than women (14.36%). Misuse of laxatives (once or more per week) was reported more frequently in men (32.61%) than women (14.36%). In the ED Screen (-) group, men (9.20%) reported more frequent binge eating than women (4.13%) and also misuse of laxatives was more frequent in men (3.37%) than women (2.18%).

Relation between BDI cut-off scores and eating disorder cut-off scores

A mean BDI score of 7.48 ($SD = 8.69$) was found for the entire sample. Just over 11% of the sample obtained a score above the BDI cut-off point of 18; correlational analyses were conducted to explore the relation between the BDI and the measures of eating disorders. All correlations were significant at a level of $p < .001$ as shown in Table 5. Finally, we evaluated the level of severity of depressive symptoms and suicidal risk across the four groups.

Based on the BDI cut-off score of 18 or greater, 36.44% ($n = 86$) of the ED Screen (+) group reported depressive symptoms at this level. Of these, 3.39% were classified as having mild depressive symptoms ($BDI = 18-19$); 12.71% reported moderate depressive symptoms ($BDI = 20-26$), and 20.3% reported severe depressive symptoms ($BDI > 27$). A small number (5.93% or $n = 14$) in the ED Screen (+) group presented high suicidal risk based on their responses to item nine of the BDI: "I want to kill myself" and "I would kill myself if I had the opportunity."

Discussion

This study documents the prevalence of disordered eating symptoms in a sample of freshman students at the University in Puerto Rico. A total of 3.24% of students reported symptoms associated with BN and 9.59% reported other disturbed eating symptoms as indicated by exceeding the cut-off point on eating disorder screening measures. Because the self-report measure used in the present study was developed for screening purposes, a diagnostic interview would be necessary to corroborate any eating disorder diagnosis. Nevertheless, this study confirms the existence of eating disorder behaviors among the freshman students of the University of Puerto Rico. This study confirms the findings of

other small studies conducted in Puerto Rico (Lebrón & Reyes, 1997; Reyes, 1997; Rosselló & Maysonet, 2004; Santos, 1996; Ureña, 2002) that reported prevalence estimates range from 1.5% to 9.8% for BN symptoms in females and 3.6% to 8.7% for disturbed eating patterns in college samples. Together, these results underscore the importance of conducting more extensive interview-based studies in Puerto Rico to obtain accurate prevalence estimates of eating disorders to inform service planning.

The ED Screen (+) group in the present study reported purging and compensatory behaviors comparable in frequency to non-minority groups. A high percentage of students were engaging in multiple dieting behaviors and experienced dissatisfaction with their weight. These findings are consistent with other studies that included Latinas in the samples (Fitzgibbon, Spring, Avellone, Blackman, Pingitore, et al., 1998; Pumariega, 1986; Vander Wal & Thomas, 2004). The frequency of observed binge eating concurs with observations by Alegría and collaborators (2007) who report that binge eating behaviors appear to be more frequent in Latino samples than restricting behaviors.

Observed sex differences in this sample are intriguing and contrast with previous reports. Although more women met the cut-off point on both eating disorders measures, binge eating and compensatory behaviors (laxative use, vomiting, diuretic use) were more common in men than women. This finding is similar to that of Striegel-Moore and collaborators (2009) in which men reported similar rates of laxative use as women. This observation suggests that greater attention should be paid to detecting and preventing isolated disordered eating behaviors in men. Eating disorders in males have been explored in the context of sexual orientation (Russell & Keel, 2002) and athletics (Petrie, Greenleaf, Reel & Carter, 2009), and have been related to specific occupations such as modeling, acting, and horse racing, among others (Carlat, Camargo & Herzog, 1997). The reason for frequent compensatory behaviors in men in the present sample is unclear; however, recent data documenting the escalating prevalence obesity in Latino-American male youth (Stovitz, Schwimmer, Martinez & Story, 2008) suggest that compensatory behaviors may be being used to combat weight gain. The high BMI found in the men in this sample, particularly those in the ED Screen (+) group indicates this is an area worthy of further study. Interview-based and qualitative studies may be necessary to understand the tendency for Puerto Rican men to engage in compensatory behaviors.

The relation between depressive symptoms and eating disorders reported in previous studies was also found in the present study. The highest depression and suicidality was found amongst the ED Screen (+) group, suggesting a greater overall burden of comorbidity. This finding confirms the findings of other studies reflecting the necessity of evaluating depression and suicidality in eating disorders (Franko & Keel, 2006).

Conclusion

This study is the first to obtain data about the prevalence of eating disorders in Puerto Rico and one of very few studies to include a large sample of Latinos of both sexes. Further research on the assessment and treatment of eating disorders is essential for the Latino population. One limitation of this study was that the assessment of eating disorders and weight was conducted with self-report questionnaires. The prevalence of eating disorder symptoms in this study was calculated using the cut-off scores of the instruments, which indicate possible cases of eating disorders. A diagnostic interview is necessary to corroborate the self-report data and to obtain an accurate estimate of prevalence of full syndrome eating disorders in Puerto Rico. However, these limitations notwithstanding, the present study contributes to our knowledge about eating disorders in Latinos and indicates

that eating disorders are a substantial problem among both female and male Puerto Rican college students.

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Table 1

Proportion of the sample screening positive for the cut-off scores on the BULIT-R and EAT-26 by sex

Groups	Men (n=722)		Women (n=1,429)		Total (n=2,151)*	
	n	%	n	%	N	%
ED Screen + group (BULIT-R \geq 91 or/and EAT-26 \geq 20)	46	6.49	188	13.20	234	10.97
Referent group [ED Screen (-)]	663	93.51	1,236	86.80	1,899	89.03

* 12 participants missing data on sex

Table 2

Mean primary and secondary outcomes by sex across groups

	ED Group Screen (+)	ED Screen (-) Group
WOMEN	N=188	N=1,236
Primary Outcomes		
BULIT-R Mean (SD)	74.54 (21.12)	46.13 (13.80)
EAT-26 Mean (SD)	28.67 (10.74)	6.64 (4.92)
Secondary Outcomes		
BDI	17.48 (12.58)	6.68 (7.27)
BMI	23.90 (4.85)	22.95 (4.98)
Weight (pounds)	138.46 (31.17)	133.94 (31.20)
MEN	N=46	N=663
Primary Outcomes		
BULIT-R Mean (SD)	75.98 (22.65)	46.47 (13.01)
EAT-26 Mean (SD)	24.83 (12.23)	5.36 (4.26)
Secondary Outcomes		
BDI	14.68 (9.94)	5.58 (7.11)
BMI	27.29 (6.83)	24.17 (4.61)
Weight (pounds)	184.54 (45.38)	164.06 (33.78)

SD= Standard Deviation

Table 3

Two-way ANOVAs comparing depression symptoms and BMI between groups

Secondary Outcomes	Means	Confidence Interval	Scheffe p-value	F	df	p-value
BMI						
Women						
(1) ED Screen (+) group	23.90	23.19 – 24.61	<.116	5.92	1	<0.0151
(2) ED Screen (-) group	22.95	22.68 – 23.23				
Men						
(1) ED Screen (+) group	27.29	25.87– 28.71	<.001	17.36	1	<.0001
(2) ED Screen (-) group	24.17	23.80– 24.55				
BDI						
Women						
(1) ED Screen (+) group	17.48	16.32 – 18.64	<.001	289.93	1	<0.0001
(2) ED Screen (-) group	6.68	6.22 – 7.14				
Men						
(1) ED Screen (+) group	14.68	12.19 – 17.16	<.001	48.23	1	<.0001
(4) ED Screen (-) group	5.58	4.94 – 6.21				

Table 4

Dieting Behaviors and disturbance eating pattern for groups by sex

	ED Screen (+)(N=188)	ED Screen (-) (N=1236)
Women		
Dieting behaviors	74.47% (n=140)	32.68% (n=404)
Binge Eating (More than one per week)	21.81% (n=41)	4.13% (n=51)
Laxatives (More than one per week)	14.36% (n=27)	2.18% (n=27)
Vomiting (More than one per month)	14.36% (n=27)	2.02% (n=25)
Diuretics (More than one per week)	7.98% (n=15)	1.37% (n=17)
Excessive Exercise (more than 10 hrs. per week)	14.36% (n=27)	4.13% (n=51)
Men		
	(N= 46)	(N=663)
Dieting behaviors	65.22% (n=30)	17.78% (n=118)
Binge Eating	30.43% (n=14)	9.20% (n=61)
Laxatives	32.61% (n=15)	3.47% (n=23)
Vomiting	26.09% (n=12)	1.81% (n=12)
Diuretics	13.04% (n=6)	1.21% (n=8)
Excessive Exercise	32.61% (n=15)	13.12% (n=87)

Table 5

Correlations between eating disorders and depression

	BULIT-R	EAT-26	BDI-R
BULIT-R	1	0.53*	0.51*
EAT-26	0.53*	1	0.42*
BDI-R	0.51	0.42*	1

* $p \leq .0001$