

A Preliminary Survey of Dieting, Body Dissatisfaction, and Eating Problems Among High School Cheerleaders

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ABSTRACT: *Cheerleading, a staple of American schools, has received little attention in scholarly research. This sport is considered "high risk" for development of eating disorders; therefore, female, high school cheerleaders (n = 156, mean age = 15.43 years) from the southeastern region were surveyed in this preliminary study to determine rates of dieting, body dissatisfaction, and eating problems. Almost one-half of the girls (46%) indicated they were currently trying to lose weight. Body dissatisfaction was significant by race [χ^2 (2, n = 153) = 9.270, p = .010] and was reported by 50% and 73.5% of Black and White girls, respectively. About 13% of girls had EAT-26 scores of 20 or higher (possible eating problems). On the Orientation to Exercise Questionnaire, a measure of subclinical eating disorders, those with eating problems (EAT-26 score of ≥ 20) had significantly higher scores (M = 87.65, p = .0002) than those without problems (M = 76.05). Furthermore, scores increased by 69% for each unit increase in BMI (p = .0481, slope = +.6902). The cheerleaders did not appear at higher risk for eating problems than adolescent girls in general, but this age group is considered at "high risk" for eating disorders, so those who work with cheerleaders should be aware of warning signs. (J Sch Health. 2004;74(3):85-90)*

Cheerleading, a popular sport, particularly among females, involves 3.5 million participants in the United States.¹ Like gymnasts and runners, their activities require a low body weight to perform tumbling and "stunting" with proficiency.² Cheerleaders usually wear revealing uniforms that may increase body consciousness and a desire to be thin. Furthermore, some universities impose weight standards and group weigh-ins for cheerleaders.³ Many squads also are competitive, meaning teams compete in different divisions and are scored similarly to gymnastics, figure skating, and diving competition.⁴ Thus, females who participate in this sport may be at significant risk to develop eating disorders.

Onset of eating disorders typically occurs during adolescence or young adulthood, when changes in body shape affect female athletes' appearance and performance.^{5,6} Lifetime prevalence of eating disorders may reach 3.7% for anorexia nervosa and 4.2% for bulimia nervosa.⁶ Both anorexia and bulimia may begin as subclinical variants of clinical eating disorders.⁷ Among active females, rates of subclinical eating disorders may exceed those of clinical eating disorders. While those with subclinical eating disorders may not suffer life-threatening medical complications of those with clinical eating disorders, they have poor nutritional status and health.⁷

Biological, sociocultural, and psychological factors are involved in developing eating disorders.⁷ Although causation may be "multifactorial," researchers suggest that

ethnicity and gender are important in understanding the etiology of eating disorders.⁸ For example, racial differences have been reported in rates of overweight, dieting, and weight concern. Black girls have a higher prevalence of overweight than White girls,⁹ yet feel more satisfied with their bodies than White girls.^{10,11} Debate continues regarding the contribution of social pressure and cultural factors to the etiology of eating disorders.⁸

Although the sport of cheerleading is a staple of American schools and colleges, it has received little attention in scholarly research.¹ In one of the few scholarly articles on cheerleaders, high school-aged cheerleaders exhibited greater body dissatisfaction and a higher incidence of disordered eating compared to collegiate-level cheerleaders.¹² It seems important, therefore, to study rates of dieting, body dissatisfaction, and eating disorders among high school cheerleaders. This sport, considered "high risk" for components of the female athlete triad,¹³ may attract females proficient in gymnastics, a sport noted for a higher-than-average number of eating disorders.¹⁴ Researchers also have called for additional studies to clarify the relationship between pursuit of sport and development of eating disorders.^{4,13}

This preliminary study examined dieting, body dissatisfaction, and subclinical and clinical eating disorders among high school-aged, female cheerleaders. Findings can assist in designing appropriate prevention and intervention programs for females participating in this sport. The study addressed three questions: 1) For girls participating in cheerleading, what are the rates of dieting, body dissatisfaction, and eating disorders? 2) Do differences exist by race (Black or White) in dieting or body dissatisfaction? 3) How do race (Black or White), EAT scores, and BMI affect scores for subclinical eating disorders?

METHODS

Participants

The sample consisted of female cheerleaders enrolled in

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public, secondary schools from three South Carolina coastal counties. In April 2002, 13 cheerleading teams were invited to participate in a one-day osteoporosis prevention workshop held at a local university and led by health department personnel. Of the 13 invited teams, nine teams attended the workshop. Included in the workshop registration materials, for teams that chose to attend, was a paper-pencil survey for the cheerleaders to complete. A cover letter accompanied the survey and explained the purpose of the questionnaire, that participation was voluntary, and that all information would be anonymous. Parental signatures were required on a detachable form at the bottom of the cover letter. Approval for this study was granted by the primary investigator's university institutional review board. All cheerleaders from the nine teams completed the survey and returned them with parental permission forms and registration materials. One hundred fifty-six cheerleaders from three counties returned surveys. Ages of the girls ranged from 12 to 18 years, and mean age was 15.43 years (SD = 1.19).

Measurements

Demographic information. Race, age, height, and weight were self-reported. Height and weight measures were used to calculate body mass index, a standard acceptable measure of body size (BMI = kg/m²). BMI, a function of weight adjusted for height, represents one of the most commonly used methods of weight categorization.¹⁵ BMI previously has been shown related to problem eating and body dissatisfaction.¹⁶ Standards for BMI weight categories (underweight, average weight, overweight) were determined using BMI-for-age percentiles for 15-year-old females.¹⁷

Body dissatisfaction. Girls were asked their current body weight and their desired weight. If desired weight was less than current weight, they were classified as having body dissatisfaction.

DiETING. One item from the Youth Risk Behavior Surveillance System¹⁸ was used to identify those trying to lose weight: "Which of the following are you trying to do about your weight?" Girls chose from these responses: "lose weight," "stay the same," "gain weight," or "I am not trying to do anything."

Eating problems. The Eating Attitudes Test (EAT-26), a 26-item, self-report measure, screens for attitudes and behavior that resemble persons with clinical eating disorders. The survey has been used extensively as a screening questionnaire for eating problems, including previous studies of high school girls.^{19,20} Cronbach's alpha is .85 and a cutoff score of 20 is believed to reliably identify maladaptive eating attitudes.²¹ Girls who scored 20 and above on the test were classified as having eating problems.

Exercise orientation. A 27-item questionnaire, the Exercise Orientation Questionnaire [EOQ], was derived from statements made by athletes and eating disordered patients about sport and investment in exercise.²² It determined patterns of risk for progression toward subclinical and clinical eating disorders among athletes and nonathletes. Six factors in the questionnaire and a sample of questions for each factor include: self-control ("I feel better after I exercise"); orientation to exercise ("I follow a controlled training regimen"); self-loathing ("I hate my body when it won't do what I want"); weight reduction ("I

would like a lower percent body fat"); identity ("I am a serious athlete"); and competition ("If I make one goal, I shoot for a harder one"). Alpha coefficients for these factors indicated reliability from 0.74 to 0.87 with 0.92 for the total score.²² Subjects indicated agreement or disagreement with statements by checking responses on a five-point, Likert-type scale.²²

Data Analysis

Surveys were manually coded, entered, and cross-validated into EPI: INFO, Version 6: A Word Processing, Database, and Statistics Program.²³ The data set was exported to the Statistical Analysis System v. 6.12²⁴ and prepared for analysis. A probability value of $p < .05$ was required for differences between groups considered statistically significant.

Means and frequencies described the sample population. Fisher's exact tests examined categorical frequencies for those trying to lose weight (yes or no) by eating problem (yes: ≥ 20 or no: < 20 based on EAT-26 scores) and by body dissatisfaction (yes or no). Chi-square tests examined categorical frequencies for trying to lose weight (yes or no) and body dissatisfaction (yes or no) by race (Black, White, and Other).

The General Linear Model Analysis of Variance procedure determined how independent variables of race and BMI affected total EAT-26 scores. The GLM also assessed all possible interactions and controlled for independent variables (race, eating problems, and BMI) for the following dependent variables: EOQ subscale items, and total EOQ score. The model was run with interaction terms for the independent variables. If these were not found significant, they were removed and the model re-analyzed. Least square means were calculated to adjust each dependent variable for independent variables. If race was found significant in analysis, the Bonferroni method for multiple planned comparisons was used (.05/number of paired comparisons) to adjust alpha level for comparisons among race (Black, White, and Other race) and control for family-wise errors.

RESULTS

Girls' age, height, current weight, desired weight, and current BMI (kg/m²) were 15.43 years (SD = 1.19), 63.21 inches (SD = 2.44), 120.37 pounds (SD = 17.01), 113.32 pounds (SD = 10.62), and 21.22 (SD = 2.87), respectively (Table 1).

When examining frequencies for race, most girls were White (64.1%), followed by Black (30.1%), and Other race (5.9%) (Table 2). Eighty-one percent (81.41%) had a body size in the average weight BMI category,¹⁶ and 89.7% desired their weight to be in this category.

Body dissatisfaction and dieting. Almost one-half the girls (46%) said they were currently trying to lose weight. Significant differences were found for eating problems by reports of trying to lose weight [χ^2 (1, $n = 150$), $p = .002$] and also by body dissatisfaction [χ^2 (1, $n = 150$), $p < .001$]. Body dissatisfaction also was significant by race [χ^2 (2, $n = 153$) = 9.270, $p = .010$]. Fifty percent of Black girls, 73.5% of White girls, and 44% of Other girls reported body dissatisfaction (Table 3).

Eating problems. Using GLM analysis of variance to control for effects of BMI and race on total EAT scores, no

significant differences were found by BMI or race. Mean EAT-26 score for all girls was 10.3, and 13.5% had scores of 20 or higher (possible eating problems). When examining selected EAT-26 items, 42.6% of the girls responded "usually" or "always" for "I am terrified about being overweight," 16.3% for "I am preoccupied with a desire to be thinner," and 13.2% for "I am preoccupied with the thought of having fat on my body" (Table 4).

Exercise orientation. To examine the effect of eating problems, race, and BMI on the EOQ, the GLM Analysis of Variance was again used (Table 5). Those with an eating problem (based on an EAT-26 score of ≥ 20) had significantly higher scores on the "orientation to exercise"

Table 1
Means and Percentages
for Demographic Information (n = 156)

	Mean	SD	Minimum	Maximum
Age	15.43 years	1.19	12	18
Height	63.21 inches	2.44	59	68
Current weight	120.37 pounds	17.01	85	181
Desired weight	113.32 pounds	10.62	90	150
Current BMI	21.22	2.87	16.09	34.08
Desired BMI	19.95	1.59	15.98	25.56

Table 2
Percentages for Selected Questionnaire Items (n = 156)

	N	%
Race		
Black	46	30.1
White	98	64.1
Other	9	5.9
Current BMI Class		
Underweight	7	4.5
Average weight	127	81.4
Overweight	17	10.9
Obese	5	3.2
Desired BMI Class		
Underweight	14	9
Average weight	140	89.7
Overweight	2	1.3
Obese	0	0
What are you trying to do about your weight?		
Lose weight	69	46
Gain weight	16	10.67
Stay the same	35	23.33
Nothing	30	20
Eating Problem (based on EAT-26 scores)		
Yes (≥ 20)	21	13.5
No (< 20)	135	86.5

subscale ($M = 21.70$, $p = .0218$), meaning they were more likely to follow a controlled training regimen than the others ($M = 18.83$). Those with eating problems also had significantly higher scores on the self-control subscale ($M = 24.35$, $p = .0142$) than those without eating problems ($M = 21.98$).

Self-loathing was significant by eating problems and BMI. Those with an eating problem were more likely to report self-loathing ($M = 15.54$, $p < .0001$) than those without ($M = 10.43$). Furthermore, scores on self-loathing also increased by 38% (ie, more self-loathing) for each unit increase in BMI ($p < .0001$, slope = $+3.804$).

Weight reduction was significant for all three independent variables. Differences were found by race ($p = .0378$) and Bonferonni multiple comparisons revealed significant differences between Blacks and Whites. Black females reported less weight reduction efforts ($M = 11.47$, $p = .0108$) than White females ($M = 12.64$). Those with eating problems were more concerned about weight reduction ($M = 12.92$, $p = .0108$) than those without eating problems ($M = 11.45$). For BMI, scores on weight reduction increased (ie, more concern about weight reduction) by 39% for each unit increase in BMI ($p < .0001$, slope = $+3.929$). No significant differences were found for the subscales of identity and competition by the independent variables.

For the entire EOQ, significant differences occurred by eating problems and BMI. Those with eating problems had significantly higher scores on this questionnaire ($M = 87.65$, $p = .0002$) than those without an eating problem ($M = 76.05$). For BMI, scores increased by 69% for each unit increase in BMI ($p = .0481$, slope = $+6.902$).

Table 3
Prevalence of Trying to Lose Weight
and Body Dissatisfaction Among Cheerleaders
by Selected Characteristics (n = 156)

	% of All	% Trying to Lose Weight	% Reporting Body Dissatisfaction
Race			
Black	30.1	36.4	50*
White	64.1	49	73.5
Other	5.9	55.56	44.4
Eating Problem			
Yes (≥ 20)	13.5	78.95*	85.7
No (< 20)	86.5	41.22	60
BMI Class			
Underweight	4.5	20	0
Average weight	81.4	39.84	62.2
Overweight	10.9	94.12	94.12
Obese	3.2	60	80
Totals	100	46	64.71

* $p < .05$.

DISCUSSION

This study evaluated dieting, body dissatisfaction, and clinical and subclinical eating disorders among female cheerleaders from public secondary schools. Young females are at particular risk for developing eating disorders,²⁵ and participation in certain sports increases that susceptibility.¹³

Consistent with other studies, BMI was an important determinant of dieting and body dissatisfaction.^{11,16} Specifically, as BMI increased, scores for the entire Exercise Orientation Questionnaire and for the self-loathing subscale increased. In our thinness-preoccupied society, these findings are not surprising, particularly among young females.

Previous research noted that Black girls are less likely to believe they are overweight, have less weight concern, and are less likely to be trying to lose weight than White girls.²⁶ This study confirmed earlier findings that overweight may be more disturbing for White than Black girls. Rates of

body dissatisfaction for White girls were significantly higher than for Black girls (73.5% White vs. 50% Black).

Table 4
Percentage of Girls Who Responded "Usually" or "Always" for Selected EAT-26 Items (n = 156)

Selected EAT-26 Items	N	%
I am terrified about being overweight.	66	42.6
I am preoccupied with a desire to be thinner.	25	16.3
I am preoccupied with the thought of having fat on my body.	20	13.2
I have gone on eating binges where I feel that I may not be able to stop.	14	9
I feel extremely guilty after eating.	11	7.2
I vomit after I have eaten.	5	3.2

Table 5
Means and p-Values for the Six Factors and the Entire Exercise Orientation Questionnaire by Race, Eating Problems (based on EAT-26 scores), and BMI (n = 156) *

Factor	Race	Eating problems	Body Mass Index	AA	W	Other
Orientation to Exercise						
Race	(p = .2271)			AA: 22.32	W: 23.55	Other: 23.63
Eating problems		(p = .0218)		Yes: 21.70	No: 18.83	
Body Mass Index			(p = .9683)			
Self-Control						
Race	(p = .2459)			AA: 20.27	W: 19.05	Other: 21.46
Eating problems		(p = .0142)		Yes: 24.35	No: 21.98	
Body Mass Index			(p = .6081)			
Self-Loathing						
Race	(p = .0518)			AA: 11.87	W: 13.19	Other: 13.89
Eating problems		(p < .0001)		Yes: 15.54	No: 10.43	
Body Mass Index			(p < .0001, slope = +.3804)			
Weight Reduction						
Race	(p = .0378)			AA: 11.47	W: 12.64	Other: 12.45
Eating problems		(p = .0108)		Yes: 12.92	No: 11.45	
Body Mass Index			(p < .0001, slope = +.3929)			
Identity						
Race	(p = .1405)			AA: 11.68	W: 12.39	Other: 11.87
Eating problems		(p = .0834)		Yes: 12.39	No: 11.57	
Body Mass Index			(p = .2272)			
Competition						
Race	(p = .1190)			AA: 16.01	W: 15.35	Other: 13.99
Eating problems		(p = .4635)		Yes: 15.36	No: 14.88	
Body Mass Index			(p = .8976)			
All Factors - Exercise Orientation Questionnaire						
Race	(p = .2010)			AA: 78.93	W: 82.81	Other: 83.7
Eating problems		(p = .0002)		Yes: 87.65	No: 76.05	
Body Mass Index			(p = .0481, slope = +.6902)			

Note: The General Linear Model Analysis of Variance was used for data analysis. BMI is used as a covariate.

*p < .05

White girls also scored significantly higher on the EOQ weight reduction subscale (ie, more likely to be trying to lose weight) compared to Black girls. Although racial differences were found on this subscale of the EOQ, racial differences were not found for the total EOQ scores or the total EAT-26 scores. Therefore, White girls reported greater body dissatisfaction and more attempts to lose weight, but scores for subclinical and clinical eating disorders were not different by race. These findings may be explained by a previous report that noted Black girls as more likely to develop eating disorders where binge eating is a core feature (such as binge eating disorder or bulimia nervosa) and White girls may develop eating disorders where dieting is the core feature.¹¹

A summary of studies of Western adults shows that 39% of women are currently trying to lose weight.²⁷ Among girls in this study, 46% were currently trying to lose weight. This percentage is lower than what Middleman et al²⁸ found as they reported 62.5% of 16-year-old girls they surveyed were currently trying to lose weight. When results from these studies are compared, cheerleaders seem less likely to desire to lose weight; however, a higher percentage of cheerleaders may have an average or underweight BMI compared to same-age girls who do not participate in sport. Cheerleaders may be dieting and feeling body dissatisfaction at a lighter BMI. In addition, 62% of girls with BMI scores in the average weight category reported body dissatisfaction, and, 42.6% noted they were terrified about being overweight. This behavior, however, is typical of adolescent girls in the United States and may not necessarily be a problem among those who participate in cheerleading. Yet, among girls in this study, dieting and body dissatisfaction were the norm rather than the exception.

The EAT-26 can be used as a screening questionnaire to detect abnormal attitudes toward food and eating disorder behavior. A cutoff score of 20 on the overall EAT scale has been used for identifying eating problems.²¹ Researchers previously reported that high school age (mean age 15.7 years) performance squad members (cheerleaders, pom-pom squad members, majorettes) had a mean EAT-26 score of 13.5 (SD = 10.9) with 23.6% scoring at or above the 20-point cutoff for eating problems.²⁰ The mean EAT-26 score for female cheerleaders in this study was 10.3 with 13.5% scoring at 20 or above. These findings seem more typical of those previously reported for high school girls in general. For example, Button and colleagues¹⁹ found a mean EAT-26 score of 8.83 (SD = 10.06) with 12.1% of 15-16 year-old females scoring in the high range of the EAT-26 for eating problems.¹⁹ Rosen et al²⁹ reported a mean EAT-26 score of 11.9 (SD = 10.8) among 675 females in grades 9 - 12. Results from this study support the findings of Taub and Blinde²⁰ that eating problems are distributed throughout female adolescents rather than being contained within a certain set of physical activities such as cheerleading.

Those who scored as having eating problems on EAT-26 had significantly higher scores on the Exercise Orientation Questionnaire than those who did not. Factors of orientation to exercise, self-control, self-loathing, and weight reduction all were significantly higher for those who scored "high" on EAT-26. In the future, it would be interesting for collegiate-level cheerleaders to complete the Exercise Orientation Questionnaire survey so that scores could be compared with those on the high school level. Previously,

high school cheerleaders were found to exhibit more disordered eating patterns than college cheerleaders.¹² The EOQ survey may help identify subclinical eating disorders prior to becoming clinical eating disorders. It deserves further study among different populations of female athletes.

Though cheerleaders in this study were not found at higher risk for eating problems than adolescent girls in general, this age group still is considered at high risk for eating disorders, so those who work with cheerleaders should know warning signs of eating disorders and resources for referral. In addition, cheerleaders may have a thinner body size than adolescent girls who do not participate in sports; therefore, they may be participating in unnecessary dieting.

IMPLICATIONS

Although this study included a small sample size and findings are considered preliminary, important questions were raised about pressures of this sport that should be noted by coaches, athletic trainers, athletic administrators, health care providers, school health educators, and school health services personnel. Eating disorders are serious illnesses and should not be ignored. One problem in treating eating disorders is that others tend to ignore the warning signs.³⁰ Education efforts regarding prevention, recognition, and treatment of disordered eating are encouraged.¹³ Consider the following suggestions when planning eating disorder prevention programs for female athletes:

- 1) Eliminate group weigh-ins and criticism regarding body size, weight, or shape. These methods are potentially harmful and may promote unnecessary dieting and disordered eating.³⁰

- 2) Recognize individual differences in body frame and shape. It is dangerous for an ideal level of weight or body fat to be defined for each individual. Weight does not accurately measure fitness or body fat, and lost weight can indicate loss of muscle mass.¹³

- 3) Address basic nutrition information with all female athletes. Education efforts should define a balanced diet and benefits of meeting energy needs for growth and development. Furthermore, based on preliminary findings from this study, nutrition education sessions should focus on negative consequences of unnecessary dieting and binge eating, because Black and White females who develop eating disorders may differ in core features of these disorders.

- 4) Provide education regarding physical problems that can occur from overtraining. Athletes and coaches should understand that overtraining can compromise performance and that limits exist to the philosophy that "more is better" in sport.³¹

CONCLUSIONS

Important deficits exist in knowledge about eating disorders among athletes in general;³¹ therefore, future research in this area should address limitations of this study. First, reliance on self-report. Adolescent females may not be entirely candid when reporting information about height and weight. Second, responses about weight, dieting, and body dissatisfaction may be inaccurate due to social desirability bias or the secretive nature of eating problems. Third, future research should include more diverse populations. This study only included Black and White cheerlead-

ers from South Carolina public schools to keep the sample relatively homogeneous. Fourth, participants in this study represented a range of ages and levels of participation in cheerleading. Girls who were younger or did not participate in competitive cheerleading may have attitudes and behaviors quite different from high school-aged girls or those girls participating on competitive cheerleading teams. Fifth, future research should seek larger samples to gain higher statistical power to show significant associations not discerned in this study. Further research may confirm or modify these preliminary findings and provide guidance to preventing eating problems among cheerleaders. ■

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