Overweight concerns and body dissatisfaction among third-grade children: The impacts of ethnicity and socioeconomic status

Thomas N. Robinson, MD, MPH, Jeannie Y. Chang, K. Farish Haydel, and Joel D. Killen, PhD

**Objective:** To examine the prevalence of overweight concerns and body dissatisfaction among third-grade girls and boys and the influences of ethnicity and socioeconomic status (SES).

**Study design:** Nine hundred sixty-nine children (mean age, 8.5 years) attending 13 northern California public elementary schools completed assessments of overweight concerns, body dissatisfaction, and desired shape, height, and weight.

**Results:** The sample was 44% white, 21% Latino, 19% non-Filipino Asian American, 8% Filipino, and 5% African American. Twenty-six percent of boys and 35% of girls reported wanting to lose weight, and 17% of boys and 24% of girls reported dieting to lose weight. Among girls, Latinas and African Americans reported significantly more overweight concerns than Asian Americans and Filipinas, and Latinas reported significantly more overweight concerns than whites. White and Latina girls also reported greater body dissatisfaction than Asian American girls. Some differences persisted even after controlling for actual body fatness. Higher SES African American girls reported significantly more overweight concerns than lower SES African American girls, but higher SES white girls reported less overweight concerns than lower SES white girls.

**Conclusion:** Overweight concerns and body dissatisfaction are highly prevalent among third-grade girls and boys, across ethnicity and SES. Young Latina and African American girls manifest equivalent or higher levels of disordered eating attitudes and behaviors as white and Asian American girls. (J Pediatr 2001;138:181-7)

Disordered eating behaviors and clinical eating disorders cross ethnic and social class boundaries. However, most studies have focused on white, middle and upper class children. The purpose of this study was to examine the influences of sex, ethnicity, and socioeconomic status on overweight concerns, body dissatisfaction, desired body shape, and weight control behaviors in a large, ethnically and socioeconomically diverse school-based sample of third-grade children. Knowledge about the prevalence of these attitudes and behaviors is important because long-term, inadequate nutritional intake can adversely affect cognitive performance and physical growth.

Clinical eating disorders among adolescent and young adult women are being recognized more frequently. Partial syndrome eating disorders are even more common and are associated with other psychologic disturbances. Although preadolescents are rarely diagnosed with eating disorders, prospective studies have shown that weight concerns, body dissatisfaction, and dieting history among young adolescent girls predict the onset of eating disorder symptoms over the subsequent 3 to 4 years.

See editorial, p 158.
help us better understand the development of eating disorders and create effective primary prevention programs.

**Subjects and Methods**

All third-grade children in 13 northern California public elementary schools were eligible to participate in a study of health behaviors. Parents were informed of the study by mail and given an opportunity to refuse participation for their children. Children were allowed to decline participation at any time during data collection. Trained data collectors administered surveys and performed anthropometric measures at schools. Trained interviewers made phone calls to parents or guardians during mornings, evenings, and weekends. All protocols were approved by the Administrative Panel on Human Subjects at Stanford University.

**Demographics and Socioeconomic Status**

Children reported their date of birth and sex. Ethnicity was determined from school records according to parents’ reports. Parents reported the highest level of education completed for all parents or guardians living in the household. The highest level of education completed by either parent or guardian defined the household education level, a measure of SES.12,13

**Overweight Concerns**

Children responded "yes," "no," or "I don’t know" to the first 5 items of the Kids’ Eating Disorders Survey (Tables I and II).14 The KEDS is a simplified adaptation of the Eating Symptoms In-

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**Table I.** Girls’ reports of eating attitudes and behaviors

<table>
<thead>
<tr>
<th></th>
<th>All girls (n = 449)*</th>
<th>White (n = 188)</th>
<th>Latina (n = 97)</th>
<th>Asian American (n = 101)</th>
<th>Filipina (n = 32)</th>
<th>African American (n = 23)</th>
<th>Ethnic comparisons†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want to lose weight now? (% yes)</td>
<td>35.2</td>
<td>35.0</td>
<td>43.8</td>
<td>28.0</td>
<td>21.9</td>
<td>50.0</td>
<td>...</td>
</tr>
<tr>
<td>Have you ever thought that you looked fat to other people? (% yes)</td>
<td>23.0</td>
<td>26.9</td>
<td>22.9</td>
<td>15.0</td>
<td>18.8</td>
<td>27.3</td>
<td>...</td>
</tr>
<tr>
<td>Have you ever been afraid to eat because you thought you would gain weight? (% yes)</td>
<td>22.9</td>
<td>23.0</td>
<td>27.1</td>
<td>21.0</td>
<td>12.5</td>
<td>31.8</td>
<td>...</td>
</tr>
<tr>
<td>Have you ever tried to lose weight by dieting? (% yes)‡</td>
<td>23.8</td>
<td>22.4</td>
<td>28.1</td>
<td>20.0</td>
<td>18.8</td>
<td>31.8</td>
<td>...</td>
</tr>
<tr>
<td>Have you ever tried to lose weight by fasting? (% yes)‡</td>
<td>9.6</td>
<td>7.7</td>
<td>15.6</td>
<td>6.0</td>
<td>6.3</td>
<td>18.2</td>
<td>...</td>
</tr>
<tr>
<td>Overweight concerns, range = 0 to 5 (mean ± SD)</td>
<td>1.14 ± 1.39</td>
<td>1.15 ± 1.45</td>
<td>1.38 ± 1.51</td>
<td>0.90 ± 1.26</td>
<td>0.78 ± 1.36</td>
<td>1.59 ± 1.59</td>
<td>African American, Latina &gt; Asian American, Filipina; Latina &gt; white (P = .004)</td>
</tr>
<tr>
<td>Body dissatisfaction, range = –5 to 5 (mean ± SD)</td>
<td>0.54 ± 1.17</td>
<td>0.51 ± 1.12</td>
<td>0.38 ± 1.24</td>
<td>0.05 ± 1.16</td>
<td>0.15 ± 0.91</td>
<td>0.53 ± 1.59</td>
<td>White, Latina &gt; Asian American (P = .01)</td>
</tr>
<tr>
<td>Desired body shape, range = 1 to 6 (mean ± SD)</td>
<td>2.78 ± 1.02</td>
<td>2.67 ± 1.02</td>
<td>2.82 ± 0.97</td>
<td>2.87 ± 1.01</td>
<td>2.88 ± 0.91</td>
<td>2.95 ± 1.40</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Actual sample sizes vary slightly for some variables because of missing data.
†Ethnic differences in primary outcome measures were assessed by using a Kruskal-Wallis 5-sample comparison. If a statistically significant (P < .05) difference was found, Wilcoxon rank sum tests were used for pairwise comparisons. P values from the omnibus Kruskal-Wallis tests are reported; NS = no significant differences among groups by Kruskal-Wallis 5-sample comparison; ellipses indicate that no statistical testing on individual items comprising the overweight concerns index were performed to guard against type I error. Risk differences, risk ratios, and odds ratios may be calculated from the prevalences reported. Cohen’s effect sizes for all comparisons of the primary outcome measures can be calculated as the differences of means divided by the pooled standard deviation.
‡Definitions of dieting, “dieting means eating at least some food, but less than you usually eat,” and fasting, “fasting means eating no solid food for at least 24 hours,” were provided.
Body Dissatisfaction and Desired Body Shape

Body shape dissatisfaction was determined by using the KEDS gender-specific child figures. Children selected their current (the drawing "that looks the most like YOU") and desired (the drawing that "you would most like to look like") body shapes from 2 sets of 8 drawings on the same page. Body dissatisfaction was defined as the integer difference between the desired and current figures selected. Thus positive values indicate that a child wants to be thinner.

Height and Weight

Standing height and weight were measured without shoes or outer clothing by using a portable direct-reading stadiometer and a portable electronic scale, according to standard protocols. Test-retest reliability was high for both height (intra-class Spearman $r = 0.99$) and weight (intra-class Spearman $r = 0.99$). Body mass index, the ratio of weight in kilograms to the square of height in meters, was used as a measure of adiposity.

Statistical Analysis

Means and SDs or prevalences were calculated for each outcome for each ethnic and sex subgroup. Before statistical comparisons between demographic groups were made, outcome items were examined for redundancy with principal components analysis, and then redundant items were combined into indexes. We hypothesized: (1) a high percentage of third-grade children would already report overweight concerns and body dissatisfaction; (2) more girls than boys would report overweight concerns and body dissatisfaction; (3) there would be significant ethnic differences in reported

<table>
<thead>
<tr>
<th>Table II. Boys’ reports of eating attitudes and behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>All boys (n = 446)*</td>
</tr>
<tr>
<td>Do you want to lose weight now? (% yes)</td>
</tr>
<tr>
<td>Have you ever thought that you looked fat to other people? (% yes)</td>
</tr>
<tr>
<td>Have you ever been afraid to eat because you thought you would gain weight? (% yes)</td>
</tr>
<tr>
<td>Have you ever tried to lose weight by dieting? (% yes)‡</td>
</tr>
<tr>
<td>Have you ever tried to lose weight by fasting? (% yes)‡</td>
</tr>
<tr>
<td>Overweight concerns, range = 0 to 5 (mean ± SD)</td>
</tr>
<tr>
<td>Body dissatisfaction, range = –7 to 5 (mean ± SD)</td>
</tr>
<tr>
<td>Desired body shape, range = 1 to 8 (mean ± SD)</td>
</tr>
</tbody>
</table>

*Actual sample sizes vary slightly for some variables because of missing data.
†Ethnic differences in primary outcome measures were assessed by using a Kruskal-Wallis 5-sample comparison. If a statistically significant ($P < .05$) difference was found, Wilcoxon rank sum tests were used for pairwise comparisons. $P$ values from the omnibus Kruskal-Wallis tests are reported; NS = No significant differences among groups by Kruskal-Wallis 5-sample comparison; ellipses indicate that no statistical testing on individual items comprising the overweight concerns index were performed to guard against type I error. Risk differences, risk ratios, and odds ratios may be calculated from the prevalences reported. Cohen’s effect sizes for all comparisons of the primary outcome measures can be calculated as the differences of means divided by the pooled standard deviation.
‡Definitions of dieting, “dieting means eating at least some food, but less than you usually eat,” and fasting, “fasting means eating no solid food for at least 24 hours,” were provided.
overweight concerns, body dissatisfaction, and desired body shape, although these differences would disappear after adjusting for actual body fatness; and (4) children of all ethnicities from higher SES families would report higher levels of overweight concerns, body dissatisfaction, and thinner desired body shape than children from lower SES families. Sex and ethnic differences were assessed with omnibus Kruskal-Wallis nonparametric tests of statistical significance. To guard against type I error, Wilcoxon pairwise comparisons were made only if omnibus tests demonstrated significant differences. To evaluate potential ethnic differences while adjusting for the influences of actual body fatness, similar comparisons were made within strata of BMI. Similar multivariate stratified analyses were performed separately among boys and among girls within all ethnic groups by parent education level. Multivariate regression or analysis of covariance would be inappropriate for these analyses because of collinearity. However, the large sample size allowed multivariate relationships and interactions to be examined by stratification, avoiding potential problems from collinearity. All tests of statistical significance were 2-tailed with \( \alpha = .05 \).

**RESULTS**

Of 999 third-grade children enrolled in the 13 schools, 969 (97.0%) participated in the study. Parents refused participation for 29 children, and one child was absent throughout. Participants and non-participants did not differ in age or sex. For analysis, we excluded one randomly chosen sibling from 12 pairs, and 62 children classified as requiring special education or having limited English proficiency did not complete self-report surveys, resulting in an analysis sample of 895 children. Eighty-five percent of study participants’ parents or guardians were interviewed (n = 760). The remainder could not be reached, declined participation, or did not speak English or Spanish. The children of interviewed parents were more likely to be white (47.5% vs 45.2%) and less likely to be Asian American (16.7% vs 19.1%) \( (P = .001) \) but did not differ in age or sex.

Participating children were 44% white, 21% Latino, 19% Asian American (not including Filipinos), 8% Filipinos, 5% African American, 1% American Indian, and 1% Pacific Islander; 50.2% were girls, and boys were slightly older (mean age ± SD, 8.5 ± 0.4 years vs 8.4 ± 0.4 years; \( P = .01 \)). Latino, white, and African American subjects (all with mean age of 8.5 ± 0.4 years) were slightly older than Asian Americans (mean age, 8.4 ± 0.3 years) \( (P = .01) \). Households with at least one parent or guardian with a 4-year college degree were classified as higher SES (42.7% white, 18.8% Latino, 74.0% Asian American, and 21.2% African American).

**Prevalence of Overweight Concerns, Body Dissatisfaction, and Desired Body Shape**

Among girls, 49% of whites, 70% of Latinos, 43% of Asian Americans, 54% of Filipinos, and 68% of African Americans answered “yes” to at least one KEDS question (Table I). Among boys, 35% of whites, 45% of Latinos, 55% of Asian Americans, 39% of Filipinos, and 61% of African Americans answered “yes” to at least one KEDS question (Table II). Results of principal components analysis were similar for each ethnic/sex subgroup and supported combining the 5 KEDS items into an index of overweight concerns (single significant principal component accounting for 45% of the total variance; Cronbach’s \( \alpha = .70 \) for girls, .66 for boys) and keeping body shape dissatisfaction and desired shape separate. Therefore statistical significance testing was not performed on individual KEDS items, and all subsequent analyses were performed for each of 3 dependent variables: overweight concerns, body dissatisfaction, and desired body shape.

**Sex and Ethnic Differences**

As hypothesized, girls reported greater overweight concerns \( (P = .0001) \), greater body dissatisfaction \( (P = .02) \), and thinner desired body shapes \( (P = .0001) \) than boys. After sex differences were found, ethnic differences were assessed separately for boys and girls. Among girls, African Americans had significantly more overweight concerns than Asian Americans and Filipinas (Cohen’s \( \delta = .55 \) and .59, respectively), and Latinas had significantly more overweight concerns than whites, Asian Americans, and Filipinas (\( \delta = .19, .43, \) and .53, respectively). White and Latina girls reported greater body dissatisfaction than Asian American girls (\( \delta = .41 \) and .28, respectively).

**Results of Multivariate Analyses**

To examine whether ethnic differences could be explained by differences in actual body fatness, comparisons were repeated after stratifying girls into 3 BMI groups: girls with a BMI ≤25th percentile for the entire sample, girls with a BMI between the 25th and 75th percentiles, and girls with a BMI ≥75th percentile. Filipinas were combined with all other Asian American girls for this and all subsequent analyses. As expected, overweight concerns and body dissatisfaction increased with increasing BMI in all ethnic groups. After groups were stratified by BMI, significant ethnic differences in overweight concerns persisted only in the large middle stratum \( (P = .04) \). Among these girls, Latinas reported significantly more overweight concerns than whites and Asian Americans, and there was a trend toward greater overweight concerns among African Americans compared with whites \( (P = .05) \). There were no significant differences in body dissatisfaction or desired body shape among girls or among boys.
**Socioeconomic Status Differences**

We also found significant ethnicity-by-SES interactions (Figs 1 and 2). First, we evaluated ethnic differences controlling for SES. Among girls from more educated households, African Americans and Latinas reported significantly more overweight concerns than whites and Asian Americans \((P = .001)\). There were no significant ethnic differences in body dissatisfaction or desired body shape, and there were no significant differences among boys. We also examined the effects of SES within each ethnic group (ie, controlling for ethnicity). African American girls from more educated households reported more overweight concerns than African American girls from less educated households \((P = .04)\). In contrast, white girls from more educated households reported significantly less overweight concerns \((P = .01)\) and significantly less body dissatisfaction \((P = .05)\) than white girls from less educated households. Significant SES differences were not found within the other ethnic groups or in boys.

Sample sizes were not sufficient to simultaneously stratify by ethnicity, SES, and BMI. However, BMI differences were unlikely to account for more than a small portion of the SES differences observed because SES and BMI were only modestly associated in this sample \((r = -0.19, P = .01)\) in white girls; \(r = -0.01, P = .93\) in Latina girls; \(r = .28, P = .22\) in African American girls; \(r = -0.09, P = .36\) in Asian American girls).

**DISCUSSION**

This study indicates that Hispanic and African American girls are not immune to the cultural emphasis on extreme thinness. Latina and African American third-grade girls reported greater or equivalent levels of dysfunctional eating attitudes and behaviors in comparison with white girls, even after controlling for actual body fatness and SES. Our findings suggest that body dissatisfaction and overweight concerns are prevalent across sex, ethnicity, and socioeconomic class. Traditional “protective factors,” such as ethnicity and SES, can no longer be regarded as such.

Data on overweight concerns and body dissatisfaction have not been previously reported for such a young, ethnically and socioeconomically diverse sample. Our results mirror prevalence data from somewhat older schoolchildren across the country. The secular trend of decreasing age at puberty may be one explanation for finding disordered eating and body dissatisfaction at even younger ages.

As expected, overweight concerns and body dissatisfaction were significantly more prevalent among girls than among boys. However, the prevalence among boys was higher than we anticipated. This may be cause for concern because rates of binge eating disorder have recently been reported to be similar in adult white men and white and African American women.

As hypothesized, we found ethnic differences among girls. However, our
results differ markedly from most prior studies.\textsuperscript{27-31} In previous studies African American girls typically reported less body weight dissatisfaction and fewer eating disorder symptoms\textsuperscript{16} and were more likely to be trying to gain weight\textsuperscript{19} than their white counterparts. Differences between studies may be partially due to secular changes and/or the use of different measures in culturally and geographically different samples. However, a recent study of middle school girls also showed that Latinas reported more body dissatisfaction than whites.\textsuperscript{32} Our results suggest that Latina and African American girls may be at greater risk of adopting unhealthful weight control behaviors than previously recognized. It is possible that our findings are due in part to a new awareness among young African American and Latina girls of the recent dramatic increases in child and adolescent obesity that disproportionately affect African American and Latina girls.\textsuperscript{33} Asian American girls in our study reported less overweight concerns and body dissatisfaction than many of their peers. This is consistent with most previous studies involving older adolescent\textsuperscript{34} and young adult Asians.\textsuperscript{35,36} This is also one of the first reports to include data on Filipino children.

The traditionally accepted association of higher SES with more dieting, weight preoccupation, and thinner desired body shape\textsuperscript{25,29,37} was found only among African American girls in our sample. We found the opposite among white girls. In one other previous sample, both white and African American girls from lower SES households were significantly more likely to report trying to lose weight\textsuperscript{19} and to report eating disorder symptoms.\textsuperscript{38}

The clinical significance of such a high prevalence of weight concerns and body dissatisfaction among these young children is currently unknown. These findings highlight the need for prospective studies of overweight concerns and body dissatisfaction as potential precursors of partial and full syndrome eating disorders among young girls and boys, as have been undertaken among samples of older girls.\textsuperscript{2,5,37,39} Further studies of clinical eating disorders among children may help illuminate whether internalization of prevalent body shape ideals and expression of eating disorders are indeed emerging at younger ages. Although many young children who report disordered eating attitudes and behaviors may not develop partial or full syndrome eating disorders, such children deserve serious research and clinical attention. These attitudes and behaviors may be a sign of poor eating habits,\textsuperscript{2,4,39} and dysfunctional eating attitudes are often accompanied by depression\textsuperscript{40,41} and other psychologic disturbances.\textsuperscript{3,4} The results of one recent prospective study of adolescents suggest that early dieting and restraint may also lead to an increased risk of future obesity.\textsuperscript{42} In addition, adolescents and adult women who do not meet all diagnostic criteria for clinical eating disorders still represent a large proportion of those seeking and/or referred for treatment.\textsuperscript{1,4,43,44} Concerns should be addressed and problems prevented in advance of any clinically significant sequelae or psychiatric diagnoses. Lastly, continued research on cultural factors salient to the expression of disordered eating attitudes and behaviors is warranted, given the ethnic and socioeconomic differences observed in this sample.

These results should prompt pediatricians, family practitioners, health educators, and parents to assess concerns about weight in children as young as 8 years old and to provide appropriate information on healthy eating, physical activity, and weight control behaviors. In addition, the widespread nature of these problems suggests a need for culturally appropriate school-based primary prevention programs. We thank Sarah J. Erickson, PhD, Christina Russell, Kathy Valenzuela, Mireya Samaniego, Dina L. G. Borzekowski, EdD, Sally McCarthy, Connie Watanabe, MA, Ann Varady, MS, and Helena C. Kraemer, PhD, for their contributions to this study. We also thank the students, parents, teachers, and administrators who participated in this project.

REFERENCES


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