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Weight-Control Practices Reported by Students in a Maine Middle School

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Abstract: Extension professionals who work with youth are often faced with issues of body weight, diet and/or body image. How we handle these topics has the potential to either help or harm. The goal of the study reported here was to explore the prevalence and types of weight-control methods practiced by middle school students. The majority of students reported practices that have been previously associated with increased risk for becoming overweight. Those who work with children should be careful to avoid contributing to the tendency for children to begin weight-control practices that may paradoxically increase their risk for becoming overweight.

Introduction

Extension professionals who work with youth often address issues of body weight, diet, and/or body image. How we handle these topics has the potential to either prevent or contribute to excessive weight gain, poor body image, unhealthful eating habits, and eating disorders.

In a national survey, over 60% of high school girls reported they were trying to lose weight, while less than 25% reported weights above the healthy range (Eaton et al., 2008). In 2005, nearly half of Maine middle school students were trying to lose weight, including 38% of students who were at a healthy weight (Anderson, 2007). It may be of little surprise that healthy-weight youth are trying to lose weight, because for years, media representatives, parents, peers, and others have reinforced the message that being slender is socially desirable (Dunn, Kelsey, Mathews, & Sledge, 2004; Field, et al., 2001; Ogle, Baker, Carroll, Butki, & Damhorst, 2007). More recently, health advocates have contributed by raising awareness of the "obesity epidemic" and how it may result in shorter life spans and soaring rates of type 2 diabetes (Flegal et al., 2007; Narayan, Boyle, Thompson, Sorenson, & Williamson, 2003; Olshansky et al., 2005).

In response to these messages, youth often engage in weight-control strategies that may paradoxically increase their risk for becoming overweight (Neumark-Sztainer et al., 2006; Neumark-Sztainer, Wall, Haines, Story, & Eisenberg, 2007). In Project EAT II (Eating Among Teens), 2,516 individuals who participated as junior and high school students in Project EAT I were followed after 5 years to determine how dieting and weight-control behavior correlated with later development of obesity and eating disorders (Neumark-Sztainer et al., 2006; Neumark-Sztainer, Wall, Haines, Story, & Eisenberg, 2007). Dieting, particularly the use of unhealthful weight-control behavior, was associated with a three-fold increased risk for becoming overweight. It was also associated with an increased risk for other eating and weight-related

problems. The goal of the study reported here was to explore in sub-groups of middle school students the prevalence of weight-control methods that have previously been found to be associated with increased risk for excessive weight gain and other problems.

Methods

Students in a Maine public middle school, grades 6, 7, and 8, completed written questionnaires. Students enrolled in the school resided in small towns and rural communities. Thirty-one percent (31%) of students enrolled in the school were eligible for free and reduced lunch. The percentage of students eligible for free and reduced lunch matched the school district level but was lower than the thirty-nine percent (39%) statewide rate. Relevant questions (n=26) were taken directly from the validity and reliability tested Project Eat questionnaire. The school principal, district superintendent and school board approved administering the questionnaire to all students in the school. The University of Maine Institutional Review Board for the Protection of Human Subjects approved study procedures.

At a biweekly teacher meeting, teachers received oral and written instructions from the principal investigator on how to obtain student assent, disseminate and collect signed parental consent forms and administer the questionnaire. Parents who did not wish to provide consent refrained from signing and returning the form. Questionnaires were completed anonymously in classrooms by a convenience sample of all those for whom parental consent and participant assent were obtained. To ensure privacy, participants stood file folders on their desks and placed completed questionnaires in individual envelopes. Students who did not have consent or who did not want to participate were told to work quietly at their desks. Based on preference expressed by focus group participants, rather than offering a small incentive to all those who participated, names were entered into a drawing for a \$100 gift certificate.

The United States Centers for Disease Control online calculator was used to determine Body Mass Index (BMI) and percentile scores for age and gender. Reported heights and weights were adjusted, +2.7 inches and +3.5 pounds, respectively, to account for reporting error as specified by Benner et al., 2004. BMI and percentile scores were also calculated for adjusted measurements. General descriptive statistics were generated and quantitative analyses were conducted using the Statistical Package for Social Sciences (SPSS for Windows, version 12.0). The probability level of $p \leq 0.05$ was selected a priori. The following analyses were conducted for actual reported weights and heights, as well as those adjusted for reporting error:

- "Exercise, Ate more fruits and vegetables, Ate less high fat foods, and Ate fewer sweets" were interpreted as "healthful" behavior.
- "Fasted, Ate very little food, Used a food substitute $\hat{=}$ powder or special drink, Skipped meals, Smoked more cigarettes, Took diet pills, Made myself vomit, Used laxatives and Used diuretics" were interpreted as "unhealthful" behavior.
- Participants were sorted into four categories, those with:
 1. No weight control behavior (do not report dieting and do not use any specific weight control behavior)

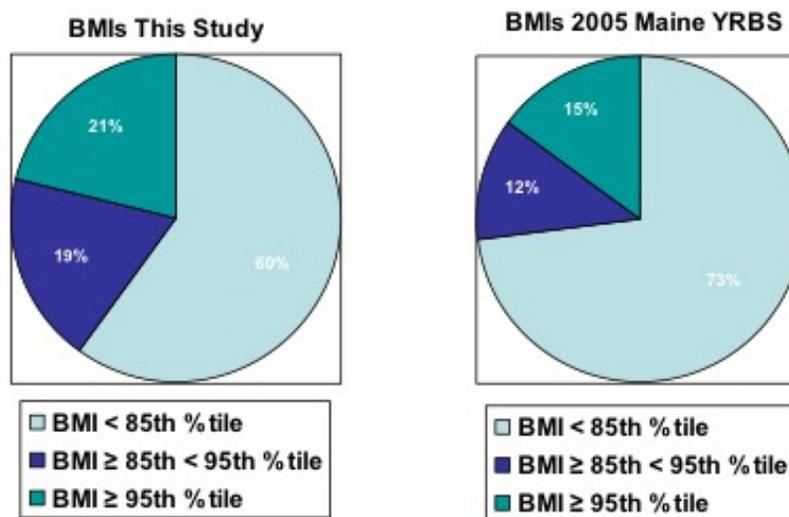
2. Healthful non-dieting behavior (do not report dieting, and use at least one healthful weight-control behavior, but do not use any unhealthy weight-control behavior)
 3. Healthful dieting behaviors (report dieting, but do not use any unhealthy weight-control behavior)
 4. Unhealthy behaviors (yes or no for dieting, and use at least one unhealthy weight-control behavior)
- For each category of underweight, healthy weight, at risk for overweight and overweight, the percent reporting no behavior, healthful non-dieting behavior, healthful dieting behavior and unhealthy behavior was determined.

Results

Of the 568 students in the school, 195 participated, a participation rate of 34%. The school administrators stated this was approximately double the participation rate for previous surveys. Fifty-six percent (56%) were female and 44% were male. Nineteen percent (19%) of the respondents reported weights corresponding to being "at risk for overweight" and 21% "overweight" as compared to the Maine Youth Risk Behavior Survey (YRBS) figures of 12% and 15%, respectively (see Figure 1).

Figure 1.

A Comparison of Proportion of Participants in BMI Categories Calculated from Reported Heights and Weights in the Study with Those Reported in the 2005 Maine Risk Behavior Survey

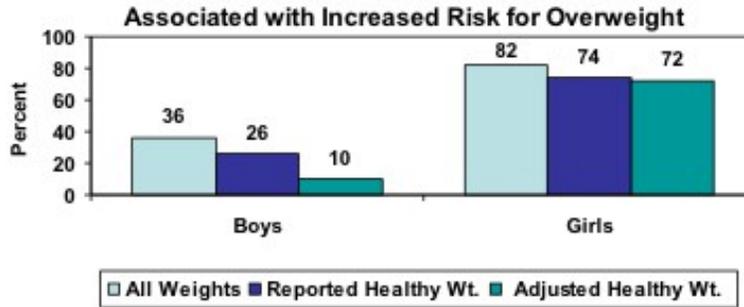


Using the chi-square test of independence, types of reported weight-control practices were associated with weight categories of underweight, healthy weight, at risk for overweight and overweight, with practices more prevalent in higher weight categories ($p \leq 0.05$). Reported weight-control practices were not associated with gender ($p \leq 0.05$). However, when Project EAT II findings were applied to the study, longitudinal risk for girls was higher than that for boys, with 82% of girls, and 36% of boys, engaged in weight-control behavior

that had been associated with increased risk for overweight (See figure 2). Seventy-four percent (74%) of girls, and 26% of boys, who reported weights in the healthy range engaged in weight-control practices previously associated with increased risk for overweight. Seventy-two percent (72%) of girls, and 10% of boys with *adjusted* weights in the healthy range engaged in weight-control practices previously associated with increased risk for overweight.

Figure 2.

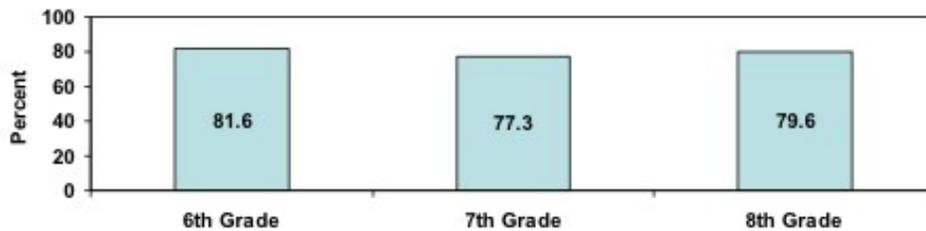
Percent of Students Who Reported Weight-Control Behavior Associated with Increased Risk for Overweight



Weight-control behavior was not different between grades ($p \leq 0.05$) (Figure 3).

Figure 3.

Percent of Students Who Reported Weight-Control Behavior Associated with Increased Risk for Overweight by Grade



Discussion

A larger percentage of participants in the study reported heights and weights in the "at risk for overweight" and "overweight" categories than in the 2005 Maine YRBS. This may have been due to sample selection or actual differences in this subset.

The vast majority of girls who participated in the study reported they had attempted to lose weight by using methods that Neumark-Sztainer and colleagues previously found were associated with an increased risk for overweight (Neumark-Sztainer et al., 2006; Neumark-Sztainer, Wall, Haines, Story, & Eisenberg, 2007). Even a majority of girls in the healthy weight range engaged in activities that may unintentionally lead to excessive weight gain. This practice may be a result of low body satisfaction and a distorted self-perception of body weight (Hogan, & Strasburger, 2008; Neumark-Sztainer, Paxton, Hannan, Haines & Story, 2006). Self-perception of being overweight has been found to be the strongest predictor of overweight as adolescents progress from 7th through 8th grade (Klein, Lytle, & Chen, 2008). While there were no

differences between behavior reported by boys and girls, more girls were at risk. The difference in risk between boys and girls is explained by the Project EAT II findings that healthful dieting was associated with an increased risk for overweight in girls, but not in boys.

Adjusting for misreporting of weights and heights had little effect on interpretation of results for girls (74% vs. 72%) yet made a substantial difference for boys (26% vs. 10%). Adjustments for misreporting moved a larger portion of the boys out of the healthy weight range, thereby leaving only 10% of the healthy weight boys practicing unhealthful weight control practices.

In the study, potentially harmful weight-control behaviors appear to have become established prior to 6th grade and remained constant throughout middle school. This finding is consistent with those of other researchers who have reported that "desire for thinness" and "lower self-concept among girls with higher weight status" at least as early as age 5 to 6 years old (Davison & Birch, 2001; Lowes & Tiggemann, 2003).

Adolescent behavior targeted specifically towards weight-control is ineffective (Robinson, 2004). In Project Eat II the researchers found that weight-control behavior did not predict weight loss (Neumark-Sztainer et al., 2006). In contrast, researchers have found that when the focus is on healthful behavior for all youth, not just those who are overweight, obesity and disordered weight control behavior have been prevented (Austin, Field, Wiecha, Peterson, & Gortmaker, 2005). Moreover, programs may help to improve body image (Cason, 1999).

The study reported here had several limitations. Participants were not selected at random. It was a convenience sample of all those in a single school who received parental consent and were willing to participate. Therefore, results are not necessarily representative of all students in the school or students in other schools. Students with weight or eating concerns may have avoided participation. All data were self-reported. As was previously stated, heights may have been over-reported, and weights may have been under-reported. Eating behaviors perceived to be embarrassing may have been under-reported. Participants may have provided answers that they thought researchers would like.

Conclusion

Most middle school students in the study reported here were practicing weight-control behavior, even amongst those who reported weights in the healthy range. Many of these practices are considered unhealthful and put young adolescents at risk for becoming overweight in the future. In trying to control body weight, middle school students may unintentionally increase their risk for future weight problems. There is a clear need for interventions that discourage potentially detrimental weight control behaviors by providing children with the knowledge, skills, social support, and environment needed for healthy self body image, internal recognition of internal cues for hunger and satiety, media literacy, healthful dietary behavior, and adequate physical activity.

In that the study demonstrated weight-control behaviors seem to be well established by 6th grade (Figure 3), prevention efforts should be targeted at earlier ages. More research is needed to determine the age at which dieting behaviors are initiated and when prevention interventions would be most effective. More research is also needed to understand what the primary social and environmental influences are that lead to dieting behavior.

Extension educators who work with children should be advised to avoid messages and activities that could potentially encourage dieting and other weight-control behavior and instead focus on healthful eating and physical activity. Many effective evidence-based educational programs that focus on positive behavior are available to Extension educators and volunteers. We must be careful to avoid making negative judgments of

others' bodies. Moreover, it may be prudent for influential adults to avoid expressing dissatisfaction with our own bodies and to avoid modeling unhealthy weight loss practices.

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