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ABSTRACT

This report describes the dieting practices of 796 Nebraskans in grades 8 and 10. The results presented in this report are based on questions from the 1989 National Adolescent Health Survey administered to a total of 1,689 adolescents. These topics are covered: (1) incidence of dieting in adolescent males and females; (2) methods used by dieters to control weight which showed that females were more likely than males to use the methods of eating less, avoiding sweets, choosing only low calorie foods, and eating only salads, males were more likely to choose liquid diets and use laxatives; (3) comparison of the usage of little or no salt, avoiding butter, cutting off fat, and removing skin from chicken between dieters and non-dieters; (4) incidence of skipping meals between dieters and non-dieters; (5) snacking practices of dieters and non-dieters; (6) nutrition knowledge of dieters and non-dieters; (7) effects of a health education course for dieters and non-dieters; and (8) relationship of knowledge scores and snacking practices. The implications of the findings for the levels of school environment, personality, and behavior are discussed. It is noted that the promotion of health-enhancing behavior change through nutrition and/or health education can be developed at each of these levels. (ABL)

Nebraska Prevention Center for Alcohol and Drug Abuse

Technical Report 21

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ADOLESCENT DIETING AND WEIGHT LOSS PRACTICES IN NEBRASKA

INTRODUCTION

Food selection is affected by both the availability of different foods and the prevailing social and cultural norms. Restricting food intake, dieting, represents a conflicting set of social and cultural norms. The 200 million dollars spent each year on over-the-counter appetite suppressants[1] and the estimated 5 billion dollars spent annually on weight loss gimmicks and fad diets[2] reflect the importance to consumers of restricting food intake. Dieting and weight loss activities among young people, who are still maturing physically, present an interesting challenge to educators to insure these young people are sufficiently informed to manage both the need for good nutrition and the desire to reflect current social standards related to body shape, size and eating practices.

A growing body of literature suggests that adolescents lack accurate nutrition knowledge and have poor eating habits.[3-6] Several studies have documented the dieting practices of adolescents, although most have focused on adolescent females with eating disorders such as anorexia nervosa and bulimia.[7-8] Relatively few studies have provided data concerning the extent adolescent dieters practice good nutrition and whether they differ significantly from adolescent nondieters in terms of nutrition knowledge and eating practices. Little is known about the impact of health education and nutrition education on nutrition knowledge, eating behaviors or dieting practices of adolescents.[9]

This paper describes the dieting practices of 796 Nebraskans in grades 8 and 10. The results presented here are based on questions from the 1989 National Adolescent Student Health Survey administered to a total of 1,689 Nebraska adolescents.

WHO DIETS?

During the year prior to the survey 67.2% of the females and 28.0% of the males admitted "Changing eating habits or (having) gone on a diet at least once for more than one week to control weight." Dieting usually implies an attempt to lose weight and we make this assumption in this paper; however, we do recognize that among the males in particular, diets could represent conscious attempts to gain weight.

Of the females who reported dieting, 24.0% report having done so once; 26.5% twice, and 49.5% three or more times in the last year. Among the males who reported dieting, 37.1% have dieted once; 32.2% twice, and 30.6% three or more times in the last year.

Table 1 shows that more 10th grade females (71.6%) have attempted to change weight than 8th grade females (62.6%), but among the males the proportion attempting to change weight is essentially the same for both grades (28.6% 8th grade; 27.4% 10th grade). Table 1 presents in detail the proportion of males and females, 8th and 10th graders who have attempted to change weight.

Clearly weight control, which we shall refer to as dieting, is not restricted to females. These data suggest that repeated efforts to control weight are relatively common, especially among females. This means that many single attempts to control weight are unsuccessful, something most adults and the diet industry recognize.

DIETING METHODS

An examination of methods used by adolescents to control weight suggests something of their levels of knowledge about weight control. It also reveals the proportion of adolescents exposed to possible risks

Table 1
Students who dieted for more than one week to control weight

	Female		Male	
	8th Grade %	10th Grade %	8th Grade %	10th Grade %
0 times	37.4	28.4	71.4	72.6
1 time	15.8	16.4	12.5	8.3
2 times	17.0	18.6	9.5	8.6
3 times or more	29.8	36.6	6.6	10.5
N =	390	428	427	444

associated with weight control. Table 2 ranks the methods of weight control used by students in this samplewho dieted in the last year from the most common to the least common under two headings: "Sometimes" and "Most of the time."

Table 2 shows that females were significantly more likely than males to attempt to control their weight by simply "eating less" (60.3% females; 45.2% males). Similarly, females were more likely to avoid sweets (43.5% females; 30.4% males), to choose low calorie foods (34.4% females; 18.5% males); and to eat only salads (9.1% females; 4.1% males). Males on the other hand were more likely to choose liquid diets (10% males; 5.9% females) eat high protein foods (8.4% males; 3.8% females), and use laxatives (4.5% males; 2.3% females). In general, practices were similar among females and males with a few interesting exceptions. These exceptions tend to reflect socially established sex role options related to weight control and serve to remind us of the powerful socializing forces associated with food selection.

Potentially dangerous methods of dieting, such as using laxatives and throwing up after eating, were practiced by the fewest students. Among the females 2.3% reported using laxatives as did 4.5% of the males. Throwing up after meals was practiced by 5.6% of the females and 4.0% of the males. While these two methods were the least common weight control practices used "most of the time" a disquieting percentage (17%) of the females in grades 8 and 10 had practiced throwing up as a weight control method, when those who practiced throwing up "some of the time" were added to the number who used this method "most of the time."

Table 2
Methods used by dieters to lose weight

	Female		Male	
	Sometimes %	Most of the time %	Sometimes %	Most of the time %
Eat less	34.1	60.3	38.6	45.2
Exercise	39.6	53.2	33.0	53.9
Avoid sweets	43.2	43.5	43.3	30.4
Eat low calorie or diet foods	49.6	34.4	48.2	18.5
Skip meals	45.1	29.8	47.9	22.1
Fasting	38.9	17.5	37.7	11.4
Eat only salads	49.0	9.1	40.2	4.1
Eat only fruit	48.0	5.1	45.2	5.8
Drink only liquids	30.8	5.9	30.7	10.0
Eat high protein foods	30.1	3.8	32.5	8.4
Diet pills and candies	12.8	6.5	10.2	5.1
Throwing up after eating	11.1	5.6	6.5	4.0
Laxatives	5.3	2.3	7.0	4.5
N =	551		245	

LOW RISK CHOICES BY DIETERS AND NONDIETERS

Four items on the questionnaire allowed the comparison of dieters and nondieters based on behaviors designed to lower risks of nutrition-related health problems: reducing salt intake, avoiding butter, cutting fat from meat, and not eating the skin of chicken. We thought it possible to identify important differences between dieters and nondieters from answers to questions about these four practices Such was not the case.

Dieters and nondieters (females and males) differed little in the use of salt or the likelihood of cutting fat from meats or removing chicken skins. Female dieters were more likely than nondieters to avoid butter. A minority of this sample of Nebraska student dieters and nondieters were likely to remove chicken skin before eating although this practice was significantly more common among females than males (Table 3). Cumulative scores on these four practices do not differentiate dieters from nondieters for either males or females.

Table 3
Dieters and nondieters compared on four nutrition practices

	Female		Male	
	Dieters %	Non-dieters %	Dieters %	Non-dieters %
Use little or no salt	84.6	87.4	85.3	72.2
Avoid butter	62.3	53.3	56.6	57.9
Cut off some or most fat	89.6	93.8	86.2	85.7
Remove some or all skin from chicken	46.8	51.0	37.8	35.2

Skipping meals

Dieters are more likely to skip meals than nondieters. Breakfast is the meal most often skipped. Among females 49.7% of the dieters skipped breakfast five or more times in the last week compared to 40.8% of the nondieting females. Forty-one percent of male dieters skipped breakfast five or more times in the last week compared to only 28.4% of the nondieting males (Table 4).

Of the female dieters, 23.2% skipped lunch compared to 13.7% of nondieters. Male dieters were less likely to skip lunch, but still 12.8% of them did so five or more times compared to 10.5% of the nondieters. Dinner was the least likely meal to be skipped. Dieters, however, were still more likely to skip dinner than nondieters.

Table 4
Skipping meals as a dieting practice in the past week

	Female		Male	
Skipped 5 or more...	Dieters %	Non-dieters %	Dieters %	Non-dieters %
Breakfasts	49.7	40.8	41.0	28.4
Lunches	23.2	13.7	12.8	10.5
Dinners	11.8	5.6	8.0	5.9

Snacking practices

Thirteen items assessed specific snacking practices. To demonstrate differences in snacking practices between dieters and nondieters Table 5 compares three nutritious snack choices with three less nutritious snacks. Females were no more likely than males to select nutritious snacks. More females selected fruits/vegetables for snacks, while more males selected juice and milk. None of these differences

Individual knowledge items indicated shortfalls in information for both males and females regardless of their dieting practices (Table 7). Students knew that salt was associated with high blood pressure (82%), sugar with dental caries (75%), saturated fats with heart disease (75%), that cooking with fat increased fat in foods (74%), and that yogurt contained less fat than ice cream (63%). In each case, more females than males knew the correct answers to these questions. On the low end of the knowledge scale only 12% knew that baked beans had more fiber than potatoes, 21% knew about connection between fiber and colon cancer and only 30% identified a hot dog as having more fat than a peanut butter and jelly sandwich.

Perhaps the most striking finding about nutrition knowledge was the low scores of this sample of students on this test. Average scores were frequently below 50% correct.

Table 7
Knowledge items answered correctly

	Females %	Males %
Salt and high blood pressure associated	84.0	79.8
Cooking with fat increases the amount of fat in food	80.0	68.2
Saturated fat causes heart problems	77.9	71.2
Sugar related to dental caries	76.2	73.4
Frozen yogurt has less fat than ice cream	70.9	56.5
Ham sandwich has more salt than turkey sandwich	60.5	53.0
Cornflakes have less fiber than bran flakes	54.2	46.7
Canned vegetables have more salt than frozen vegetables	52.4	41.2
Boiling vegetables reduces vitamins	51.2	43.4
Lose weight at 1-2 pounds per week	49.1	31.5
Peanut butter jelly sandwich has less fat than hot dog	31.7	29.9
Too little fiber and colon cancer associated	22.9	20.3
Baked beans have more fiber than potatoes	13.4	9.8

was great. Similarly no clear pattern of differences between dieters and nondieters of either sex was noted in the selection snacks.

Table 5
Snacking practices on the previous day

	Female		Male	
	Dieters %	Non-dieters %	Dieters %	Non-dieters %
Fruits/vegetables	50.6	53.1	49.6	48.2
Juice	43.4	43.8	45.4	52.3
Milk	48.0	59.4	62.3	61.6
Chips/Pretzels	32.4	39.3	34.1	42.9
Candy	45.1	58.4	51.2	63.5
Nuts/Cookies	41.4	49.6	46.0	52.8

NUTRITION KNOWLEDGE

Thirteen items measured nutrition knowledge. Using mean items correct as an indicator of knowledge, female dieters scored higher than female nondieters. No difference was noted between male dieters and nondieters. Females scored higher than males (Table 6).

Table 6
Nutrition knowledge means scores

	Female		Male	
	Dieters %	Non-dieters %	Dieters %	Non-dieters %
Mean score (13 possible)	7.40	6.90	6.24	6.25

Table 9
Nutrition education and nutrition knowledge scores

	Female		Male	
	Dieters %	Non-dieters %	Dieters %	Non-dieters %
Mean score *with* Nutrition Education course	7.6	7.1	6.7	6.8
Mean score *without* Nutrition Education course	6.5	6.3	5.2	5.3

Knowledge Scores and Snacking Practices

The effects of education are evident when individual snacking practices on the previous day are examined. In each case more of the adolescents who had a course in health tended to choose healthy snacks: milk, juice, and fruit/vegetables. Education did not appear to be related to the number of students eating less healthy snacks such as chips and pretzels (Table 10).

Table 10
Relationship of health education to snacking practices

	Health Education %	No Health Education %
Chips/pretzels	33.4	30.9
Nuts	10.2	10.5
Fruit/Vegetables	51.9	40.1
Juice	45.4	36.2
Milk	53.5	46.6

Effects of education

Mean nutrition knowledge scores of students who had at least one *health* education course since the 7th grade were compared with scores of students who had not had a health course. Scores of students who had at least one *nutrition* education course since 7th grade were compared with scores of students who had not had a nutrition course.

Females who had health education scored significantly higher than those without health education, and dieting females scored highest (Table 8). Having had a health course had little significant effect on the nutrition scores of male dieters, but appeared to have a small effect on male nondieters.

Table 8
Health education and nutrition knowledge scores

	Female		Male	
	Dieters %	Non-dieters %	Dieters %	Non-dieters %
Mean score *with* Health Education course	7.6	7.1	6.3	6.4
Mean score *without* Health Education course	6.3	6.5	6.6	5.6

Females and males who had a nutrition education course scored higher than those who had not (Table 9). Among the females, dieters who had nutrition education got the highest mean score. Males who had nutrition education, both dieters and nondieters, scored higher than males who had not had nutrition courses.

As a last look at the effects of health education and nutrition education we controlled for dieting practices and compared education to knowledge scores using an analysis of variance (ANOVA). Among females, health education was significantly related to nutrition knowledge ($p < .001$). For males the effects were not as great ($p < .04$).

IMPLICATIONS

These findings raise some interesting and challenging questions for those who grapple with adolescent health problems and high risk behaviors. Research on adolescent eating practices consistently reports that many children and adolescents have unhealthy eating patterns and food preferences that are usually high in fat, salt and sugar.[3-6] These dietary habits put youth at risk for cardiovascular diseases, cancer and other illnesses as they develop into adults. There is clearly a need for family and school-based interventions that focus on dietary behavior change.

Changing family food preparation and eating patterns is especially difficult, but schools represent an efficient vehicle to encourage healthier eating practices for children and adolescents. Perry[10] has suggested a conceptual framework for school-based health promotion activities. Perry's framework is summarized here to encourage the development of ideas to improve the nutrition components of school-based health education programs and the refinement of existing nutrition education programs.

Perry's framework, or model, proposes that school-based health promotion interventions occur on three levels: environment, personality, and behavior. Efforts to encourage health behavior change may occur at one or at all of these three levels.

Level 1: School Environment

Intervention strategies at the environmental level are designed to develop new norms and expectations for health enhancing behavior. The presence of influential models who practice good nutrition, social

pressure to change eating practices and opportunities to practice new nutrition behavior are examples of how the school's environment might affect nutritional behavior.

Figure 1 illustrates some nutrition interventions that involve changes in the school environment. By providing healthy alternatives in vending machines, school stores and school lunch programs, a school may overcome physical barriers to healthy foods and snacks and may weaken the existing norms and expectations for poor food selection.

Friends, coaches, teachers, and even media figures can be recruited to serve as models of good nutrition practices. To the extent that valued role models do exist, efforts could be made to educate these role models on weight loss, eating practices and other issues salient to adolescents and encouraging them to speak out on these issues.

Families provide the most powerful influence for children and adolescents. Strategies to involve family members in community and school-based nutrition education programs are difficult but have valuable long-term pay offs. The easy availability of nutrition information from schools could help with nutrition related problems such as appearance and physical fitness, especially if the information source is an easily accessible person, such as a counselor.

Level 2: Personality

This level deals with predisposing factors and "enduring dispositions" of an individual that can affect health-enhancing behavior.

Educator's should focus on personality issues particular to adolescents: concern with body image and appearance often leads to a preoccupation with dieting, especially among females. Instructional strategies could focus on such things as enhancing positive body image, self care, grooming and fitness. Strengthening youths' sense of control or mastery over their health and their ability to make informed food choice is critical if they are to maintain positive health behavior.

Level 3: Behavior

Schools can intervene at the behavioral level by helping students develop and use new skills and by providing the positive reinforcement of new behaviors.

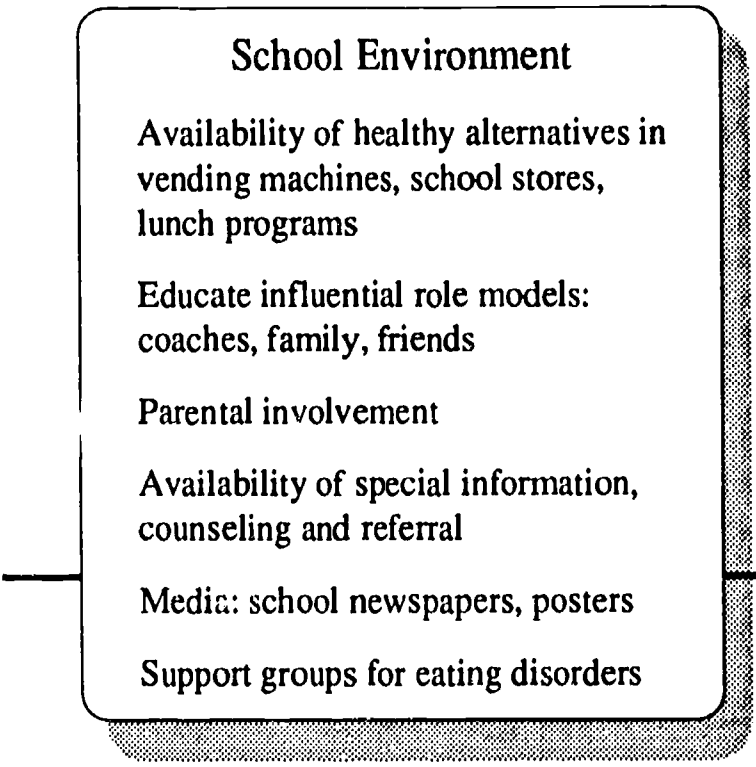
Adolescents often lack practical skills for interpreting food labels, making food choices, evaluating their diets for important nutrients, acquiring cooking and eating practices to reduce or control such things as saturated fat, and learning substitutions for high fat, sodium and sugar ingredients. Adolescents need training in decision-making and resistance skills if they are to learn to fend off pressure to eat junk food and practice unsafe dieting. It is important that adolescents have the opportunity to practice new skills and have new behaviors reinforced.

The promotion of health-enhancing behavior change through nutrition and/or health education can be developed at each of the three levels. The critical questions to be addressed in any education program are:

> How can your school environment be changed to support good nutrition?
>
> How can quality nutrition education be tailored for students' personality characteristics, and how can students' personality characteristics be enhanced to support health enhancing behavior?
>
> How can good nutrition behaviors exhibited within the school be reinforced and poor nutrition behaviors be modified to become more health enhancing?

Figure 1
A school-based health promotion approach to nutrition education

Adapted from Perry (1985) "A Conceptual Approach to School Based Health Promotion," *School Health Research.*



Personality

Influence predisposing factors: knowledge, attitudes and beliefs

Enhancing values of students

Developing self-efficacy

Strengthening locus of control

Acknowledge and accommodate cultural diversity

Develop programs that accept and begin with the characteristics of the students

Behavior

Skill development
- decision making
- resistance to peer pressure
- assertiveness
- self management

Skill practice
- food selection
- food preparation
- food substitution

Skill reinforcement/feedback

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