Psychosocial and Behavioral Correlates of Dieting and Purging in Native American Adolescents

Mary Story, PhD*; Simone A. French, PhD*; Dianne Neumark-Sztainer, PhD, MPH*; Blake Downes‡; Michael D. Resnick, PhD§; and Robert W. Blum, MD, PhD||

ABSTRACT. Objective. This study examined the relationship of psychosocial factors and health behaviors to frequent dieting and purging behaviors in Native American adolescent boys and girls.

Design. School-based health survey.

Setting and Participants. A total sample of 13,454 Native American youth in grades 7 through 12 living on or near reservations from eight Indian Health Service areas completed a self-report, school-based health questionnaire.

Results. Almost half (48.3%) of the girls and one third (30.5%) of the boys had dieted in the past year. More than one fourth (28%) of the girls and 21% of the boys reported purging behavior of some type. Dieting frequency and purging status were associated with negative psychosocial factors and health risk behaviors. Dieting frequency in girls was associated with weight dissatisfaction, concerns about being overweight, high emotional stress, binge eating, alcohol use, tobacco use, suicide ideation and attempts, delinquent behaviors, and physical and sexual abuse. Purging status was positively and independently associated with negative psychosocial and health behavior risk factors. There were fewer significant relationships in boys.

Conclusions. Findings from this study suggest that dieting and purging are associated with similar psychosocial factors and health-compromising behaviors in Native American and white youth. Implications for future research and prevention programs are discussed. Pediatrics 1997;99(4). URL: http://www.pediatrics.org/cgi/content/full/99/4/e8; Native American youth, dieting, purging, psychosocial factors, health behaviors.

ABBREVIATIONS. IHS, Indian Health Service; BMI, body mass index; OR, odds ratio; CI, confidence interval.

The high prevalence of dieting, weight concerns, and eating disturbances among American white adolescent girls is well documented.1-4 Less studied are eating disturbances and dieting among American minority groups. A recent review of the research literature on eating disturbances among diverse ethnic and racial groups in the United States concluded that compared with white girls, eating disturbances are less frequent among African-American and Asian-American girls, equally common among Hispanic girls, and more frequent among Native American girls.5 Although research is limited across all ethnic and racial groups, most of the studies have been with African-American girls, fewer with Hispanic girls, and very few with Asian-American and Native American girls.

The studies that have been done with Native American girls have all indicated that eating disturbances and unhealthy weight loss practices are common. Smith and Krejci6 administered two eating disorder screening tests to 129 Native American adolescent girls in the Southwest. They found that Native Americans scored higher on disturbed eating behaviors and attitudes than white or Hispanic adolescents. Snow and Harris7 also found a relatively high rate of disordered eating among a sample of 51 Native American adolescent girls in New Mexico, with 11% self-reporting symptoms consistent with bulimia. Rosen et al8 surveyed 85 Chippewa women and girls living on or near a reservation in Michigan and found that 74% were trying to lose weight. Of those, 75% were using at least one pathogenic weight control method, including one fourth who reported some method of purging. The majority of studies conducted with Native American adolescents have been limited by small sample sizes. However, the Indian Adolescent Health Survey, with more than 12,000 youths, also found that almost half (48%) of American Indian adolescents had been on weight loss diets in the past year, with 27% reporting they had self-induced vomiting at some point to lose weight.9 Eleven percent reported having used diet pills to lose weight. The use of laxatives and diuretics to lose weight was less frequent, with only 0.6% and 1.6%, respectively, of girls ever having used these methods.10

Recent reviews of the literature suggest that eating disorders may be increasing among American ethnic and racial groups.5,10,11 Crago and colleagues5 note that although eating disorder symptoms seem similar across cultures, the contexts in which eating disorders develop and what constitutes effective interventions may vary among ethnic groups. Few studies have focused on risk factors for disordered eating behaviors among ethnic minorities. Thus, although high prevalence rates of disordered eating behaviors have been documented among certain eth-
nic minority groups, the causes of eating disturbances in ethnic minority groups are less well understood than among white adolescents. In the general adolescent population, frequent dieting and purging have been found to be associated with both weight dissatisfaction and non-weight-specific psychosocial concerns, such as low self-worth, depression, peer approval concerns, low level of family connectedness, substance use, and sexual abuse. Health-compromising behaviors such as alcohol and tobacco use have also been associated with dieting and purging behaviors in population-based samples of white adolescent girls. It is not known whether there are similar associations in ethnic subgroups of adolescents. Studies with diverse ethnic groups are needed to understand factors associated with eating disturbances and unhealthy dieting practices better and to determine whether there are common causative factors that transcend culture and relate to the broader sociocultural environment or whether factors associated with dieting and eating disturbances differ across ethnic subcultures.

The purpose of the present study is to examine the association between psychosocial factors and health behaviors and frequent dieting and purging behaviors in a large sample of Native American adolescents. We were interested in determining whether frequent dieting and purging in Native Americans was related to negative psychosocial and health behavior outcomes that have previously been identified in white girls, such as body dissatisfaction, peer approval concerns, physical or sexual abuse, emotional stress, low levels of family connectedness, and substance use.

METHODS

Subjects

The data presented in this report are derived from a health behavior survey administered in 1990 to 15,685 youths in grades 7 through 12 across the country. This study represents the largest and most comprehensive survey ever undertaken on the health status of Native American youth living on or near reservations and was conducted by the Adolescent Health Program at the University of Minnesota in conjunction with the Indian Health Service (IHS). The design and procedures are summarized briefly below.

The sample consisted of youth from 8 IHS service areas and 37 separate service units in 12 states. (The term service areas refers to geographic areas in which the IHS has responsibility. The term service units refers to the local administrative units of the IHS.) Participating service areas included Aberdeen, SD (n = 734); Albuquerque, NM (n = 238); Bemidji, MN (n = 1330); Billings, MT (n = 963); Nashville, TN (n = 377); the Navajo in Arizona, New Mexico, and Utah (n = 7115); Phoenix, AZ (n = 1163); and Alaska (n = 1534). The IHS service units that chose not to participate include Portland, OR; Tucson, AZ; Oklahoma; most of California; and all but the Chocotaw tribe in the Nashville area.

The Indian Adolescent Health Survey was administered to youth in schools located on or near reservations. The self-administered, anonymous questionnaire covered a broad range of subject areas related to adolescent health, including physical health status and practices, emotional health, relationships, substance use, and sexuality. A series of questions dealt with body image, weight perceptions and satisfaction, eating and weight loss behaviors, and self-reported heights and weights. In 15 of the 37 service units, the survey was administered in three waves: one for youths living on reservations, one for youths living in households headed by other relatives, and 7% living in settings headed by nonrelatives, including boarding schools.

After exclusion of incomplete or missing data, usable data were obtained for 12,039 youths (6,250 girls and 5,789 boys). Of these youths, 49.3% were male and 50.7% were female. Twenty-three percent were in the seventh grade, 20% were in the eighth grade, and 17% were in the ninth grade. Fifteen percent were sophomores in high school, 13% were juniors, and 11% were seniors. Forty-six percent lived in two-parent homes, 37% lived with single parent, 10% lived in households headed by other relatives, and 7% lived in settings headed by nonrelatives, including boarding schools.

Measures

Dieting and Purging Measures

Dieting behavior was assessed with the question, “How often have you gone on a diet during the last year? By diet, we mean changing the way you eat so you can lose weight.” Response options were “never,” “1 through 4 times,” “5 through 10 times,” “more than 10 times,” or “always.” Purging behaviors were assessed with two questions: “How often do you vomit (throw-up) on purpose after eating?” and “Do you use any of the following to lose weight: laxatives, ipecac, diuretics (water pills), or diuretics for weight control?” Those who reported vomiting on purpose at any frequency or who responded “yes” to any of the laxative, ipecac, or diuretics were defined as purgers. Those who reported never vomiting on purpose and who did not report using laxatives, ipecac, or diuretics for weight control were defined as nonpurgers.

Risk Factor Measures

Risk factors included both psychosocial factors and health-compromising behaviors and were assessed with one or more Likert scale items. The measures have adequate internal reliability and had been used in previous surveys of adolescent health and social behavior.

Psychosocial Variables

Family connectedness variables assessed perceptions of family and parental care, attention, and understanding (eg, “your parents care about you”). Other connectedness variables measured perceptions of caring and connectedness by nonfamily members (eg, at school or church, “school people care about you”). Peer acceptance concerns measured concerns with peer relations and to determine whether there are common causative factors that transcend culture and relate to the broader sociocultural environment or whether factors associated with dieting and eating disturbances differ across ethnic subcultures.

Health Behaviors

Prevalence of binge eating was measured with the question, “Have you ever eaten so much in a short period of time that you felt out of control and would be embarrassed if others saw you (binge eating, gorging, or bulimia)?” Out-of-control eating was measured with the question, “Are you ever afraid to start eating because you think you won’t be able to stop?” Suicide ideation measured thoughts about killing oneself in the past month, while suicide attempts measured the history of reported suicide attempts. Frequency of regular tobacco and alcohol use was measured with the question, “How often do you use the following (without a doctor telling you to): tobacco, alcohol?” Response options ranged from daily to never. A cumulative drug use mea-
sure was created by summing the frequency of use of nine drug families (tobacco, alcohol, marijuana, hallucinogenics, cocaine, amphetamines, inhalants, opiates, and barbiturates). Delinquent behaviors were measured with questions about involvement in acts that would be considered illegal for juveniles (eg, destruction of property, stealing, gang fights, and running away from home). The number of sick days from school was self-reported. History of sexual intercourse was measured with the question, “Have you ever had sexual intercourse (gone all the way)?”

**Statistical Analysis**

To examine psychosocial factors and health risk behaviors in dieters who purge versus dieters who do not purge, dieting frequency (five categories) was crossed with purging status (two categories) to create 10 dieting and purging groups. Chi-square analysis was used to examine bivariate relationships between these dieting and purging groups and each of the psychosocial and health behavior variables described above. Because of their skewed distribution (ie, very few “yes” responses to many of the health risk questions), the risk factor variables were dichotomized before analysis. Boys and girls were examined in separate analyses.

To determine whether the observed relationships remained significant when age and body mass index (BMI) were controlled, separate multivariate logistic regressions were conducted for each of the risk factor measures using the five-level dieting frequency and the dichotomized purging status measure as separate predictor variables. Psychosocial factors or health behaviors were dependent variables in separate analyses, and age and BMI were covariates. BMI (weight in kilograms/height in meters squared) was computed based on self-reported height and weight. Odds ratios (ORs) associated with dieting frequency reflect the average change in the risk factor per unit change in dieting frequency (eg, the average increase in risk from never diet to diet one to four times). This analysis assumes an interval scale (ie, a constant change in the risk factor from one level to the next for dieting frequency).

**RESULTS**

The unadjusted percentages for each risk factor by frequency of dieting in the past year and purging status are shown in Tables 1 and 2. Almost half (48.3%) of the girls and one third (30.5%) of the boys who had dieted in the past year. About 13% of the girls and 8% of the boys dieted five or more times during the past year. More than one fourth (28%) of the girls and 21% of the boys reported purging behavior of some type.

Dieting frequency and purging status were positively associated with psychosocial and health behavior risk factors. Among girls, for almost every risk factor, the healthiest patterns were found in the nondieters, whereas the most unhealthful patterns were found in frequent dieters (10 or more times or always dieting). Among nonpurging girls the greatest differentials between those who never dieted and frequent dieters were for the eating and body image variables (binge eating, fear of uncontrolled eating, low weight satisfaction, low body pride, and weight concern), which were 1.5 to 3 times more prevalent in frequent dieters than in those who never dieted, and for suicide ideation, attempts and physical and sexual abuse, which were twice as prevalent among the frequent dieters. In adolescent girls who purged, the

**TABLE 1. Unadjusted Percentages for Psychosocial and Health Behavior Variables in American Indian Adolescent Girls (n = 6250) by Dieting and Purging Status**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nonpurgers, %</th>
<th>Purgers, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never Diet</td>
<td>Diet 1–4 Times</td>
</tr>
<tr>
<td></td>
<td>(n = 2536)</td>
<td>(n = 1508)</td>
</tr>
<tr>
<td>Psychosocial variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family connectedness (high)*</td>
<td>46.0</td>
<td>41.9</td>
</tr>
<tr>
<td>Other connectedness (high)*</td>
<td>45.5</td>
<td>45.6</td>
</tr>
<tr>
<td>Peer concerns (high)†</td>
<td>36.6</td>
<td>41.8</td>
</tr>
<tr>
<td>Emotional stress (high)†</td>
<td>40.7</td>
<td>45.8</td>
</tr>
<tr>
<td>Weight satisfaction (low)†</td>
<td>27.3</td>
<td>45.3</td>
</tr>
<tr>
<td>Body pride (low)†</td>
<td>16.3</td>
<td>25.1</td>
</tr>
<tr>
<td>Concern about being overweight (high)†</td>
<td>40.7</td>
<td>70.8</td>
</tr>
<tr>
<td>Physical abuse (ever)†</td>
<td>13.3</td>
<td>19.7</td>
</tr>
<tr>
<td>Sexual abuse (ever)†</td>
<td>12.5</td>
<td>18.7</td>
</tr>
<tr>
<td>Health behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binge eating (ever)†</td>
<td>32.0</td>
<td>43.2</td>
</tr>
<tr>
<td>Fear cannot stop eating (ever)†</td>
<td>13.5</td>
<td>22.0</td>
</tr>
<tr>
<td>Alcohol use (weekly or daily)†</td>
<td>21.5</td>
<td>25.6</td>
</tr>
<tr>
<td>Tobacco use (weekly or daily)†</td>
<td>33.3</td>
<td>33.0</td>
</tr>
<tr>
<td>Cumulative drug use (≥2 drugs)†</td>
<td>37.2</td>
<td>40.1</td>
</tr>
<tr>
<td>Suicide ideation (high)†</td>
<td>23.5</td>
<td>26.8</td>
</tr>
<tr>
<td>Suicide attempt (ever)†</td>
<td>17.1</td>
<td>22.2</td>
</tr>
<tr>
<td>Delinquent behaviors (any)†</td>
<td>34.2</td>
<td>34.4</td>
</tr>
<tr>
<td>Sick days (≥1 d)†</td>
<td>47.1</td>
<td>53.3</td>
</tr>
<tr>
<td>Sexual intercourse (ever)†</td>
<td>22.3</td>
<td>31.5</td>
</tr>
</tbody>
</table>

* P < .03.
† P < .00001.
levels of the psychosocial and health behavior risk factors tended to be higher than in nonpurging girls. Yet, a similar pattern was observed, with increasing frequency of dieting associated with higher risk factor prevalence.

In girls, in multivariate analyses controlling for age and BMI, the pattern of significant findings for both dieting frequency and purging status was generally maintained. Because both dieting and purging were included in the same analysis, the findings that were significant reflect associations that persist after controlling for the other variable (eg, significant findings for dieting are independent of those attributable to purging and vice versa). ORs ranged between 1.2 and 2.1, with a tendency for stronger associations between psychosocial and health behavior risk fac-

<table>
<thead>
<tr>
<th>Variable</th>
<th>Nonpurgers, %</th>
<th>P</th>
<th>Purgers, %</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family connectedness (high)*</td>
<td>43.8</td>
<td>0.95</td>
<td>44.4</td>
<td>0.88–1.02</td>
</tr>
<tr>
<td>Other connectedness (high)*</td>
<td>45.2</td>
<td>0.99</td>
<td>48.1</td>
<td>0.94–1.04</td>
</tr>
<tr>
<td>Fear cannot stop eating (ever)†</td>
<td>42.2</td>
<td>1.21</td>
<td>49.5</td>
<td>1.15–1.27</td>
</tr>
<tr>
<td>Alcohol use (weekly or daily)*</td>
<td>17.2</td>
<td>1.13</td>
<td>28.0</td>
<td>1.07–1.18</td>
</tr>
<tr>
<td>Body pride (low)†</td>
<td>8.2</td>
<td>1.51</td>
<td>12.9</td>
<td>1.43–1.58</td>
</tr>
<tr>
<td>Concern about being overweight (high)†</td>
<td>26.3</td>
<td>1.38</td>
<td>47.9</td>
<td>1.30–1.44</td>
</tr>
<tr>
<td>Physical abuse (ever)‡</td>
<td>6.9</td>
<td>1.93</td>
<td>5.8</td>
<td>1.78–2.05</td>
</tr>
<tr>
<td>Sexual abuse (ever)‡</td>
<td>2.6</td>
<td>1.19</td>
<td>2.4</td>
<td>1.12–1.24</td>
</tr>
<tr>
<td>Suicide ideation (ever) (high)†</td>
<td>35.5</td>
<td>1.19</td>
<td>38.9</td>
<td>1.12–1.24</td>
</tr>
</tbody>
</table>

* Odds ratios (ORs) were adjusted for age and body mass index. CI indicates confidence interval.
tors among purgers than dieters (Table 3). Strong associations were seen for dieting and concern for being overweight (OR, 1.93), weight dissatisfaction (OR, 1.55), and fear of uncontrolled eating (OR, 1.53). The strongest ORs for purgers were emotional stress (1.75), binge eating (1.69), and fear of uncontrolled eating (2.17). There were no significant associations among dieting frequency for family connectedness, other connectedness, tobacco use, or cumulative drug use. For purging status, no significant relationship was found for family connectedness.

Among boys, there were fewer significant relationships among dieting frequency, purging status, and psychosocial and health behavior risk factor variables (Table 2). Increases in dieting frequency and purging status were associated with greater risk for certain variables, including the eating and body image variables (weight dissatisfaction, low body pride, weight concerns, binge eating, and uncontrolled eating), peer concerns, emotional stress, physical and sexual abuse, suicidal ideation and attempts, number of sick days, and sexual intercourse.

In boys, in multivariate analyses after adjusting for BMI and age, there were no significant differences in dieting frequency for tobacco use, cumulative drug use, sick days, sexual abuse, family connectedness, other connectedness, and delinquent behaviors. All other variables remained significant for dieting frequency, with the strongest ORs being for fear of uncontrolled eating (OR, 1.57; confidence interval [CI], 1.46 to 1.68), concerns about being overweight (OR, 1.48; CI, 1.40 to 1.55), and feeling overweight (OR, 1.45; CI, 1.34 to 1.55). The ORs tended to be greater for purging status than dieting frequency. Boys who purged were more likely to have low body pride (OR, 1.31; CI, 1.08 to 1.58), were twice as likely to fear out-of-control eating (OR, 2.21; CI, 1.85 to 2.61), and were more likely to binge eat (OR, 1.64; CI, 1.43 to 1.85) compared with nonpurging boys. Purging boys were more likely to report delinquent behaviors (OR, 1.49; CI, 1.30 to 1.69), alcohol use (OR, 1.24; CI, 1.06 to 1.43), tobacco use (OR, 1.34; CI, 1.17 to 1.52), cumulative drug use (OR, 1.50; CI, 1.32 to 1.71), physical abuse (OR, 1.50; CI, 1.19 to 1.59), and sexual abuse (OR, 2.16; CI, 1.52 to 3.06). Emotional stress (OR, 2.12; CI, 1.82 to 2.45), suicide ideation (OR, 1.74; CI, 1.49 to 2.0), and suicide attempts (OR, 1.51; CI, 1.24 to 1.82) were also greater in boys who purged than in nonpurgers.

**DISCUSSION**

The purpose of this study was to characterize Native American adolescent dieters on a range of eating disorder risk factors. Our findings suggest that frequent dieting is associated with a wide range of negative risk factors. Adolescents who did not diet consistently reported the most healthy pattern of psychosocial and health behaviors, whereas those who had dieted more frequently had the most negative pattern. Dieting frequency was most strongly associated with body image variables and fears of uncontrolled eating. Purging status was positively and independently associated with higher risk factor prevalence. In girls who purged, absolute levels of the risk factors were higher than in the nonpurging girls. This pattern of results was similar in boys. These findings are consistent with a previous study examining correlates of frequent dieting in about 34,000 Minnesota adolescents (the Minnesota Adolescent Health Study), of which 86% were white. Interestingly, the results were similar to the present study in that dieting frequency was associated with negative psychosocial and health behavior outcomes, and purging was also independently associated with negative risk factors. In both studies, dieting frequency for girls was associated in a dose-response pattern with psychosocial and health behavior variables. Although the ORs between the two studies for dieting frequency were similar in magnitude, in the present study purging status had more modest ORs than in the previous study.

In further analysis of the Minnesota Adolescent Health Study, psychosocial and behavioral correlates of dieting among nonwhite ethnic groups including African-American, Hispanic, Native American, and Asian-American girls were examined. In all ethnic groups, dieting was associated with weight dissatisfaction, perceived overweight, and low body pride. Purging was associated with weight dissatisfaction, perceived overweight, low body pride, greater suicide risk, and greater alcohol use. In the study by French et al., there were only 291 Native Americans, most of whom resided in urban areas. Because of sample size limitations, a multivariate analysis could not be done with Native Americans. However, in bivariate analyses, perceived overweight, weight dissatisfaction, peer acceptance concerns, and a history of sexual intercourse were positively associated with dieting frequency. Purging status in Native Americans was significantly associated with perceived overweight, weight dissatisfaction, peer acceptance concerns, emotional stress, and suicide risk. Overall, these findings suggest that although the prevalence of dieting may be lower in Native American adolescents than in white adolescents, the correlates of dieting are similar, suggesting common underlying mechanisms. Based on our previous studies, as well as other studies, it is striking that body dissatisfaction is consistently and strongly associated with dieting and purging practices. This suggests that the larger sociocultural environment, which emphasizes thinness as a beauty ideal and equates slenderness with attractiveness in women, may be strong enough to affect ethnic and cultural subgroups.

In the past, eating disorders and eating disorder symptoms have been considered culture-bound syndromes, constellations of symptoms that are restricted to a particular culture or group of cultures. However, it seems that the prevalence of these disorders is increasing among all social classes and ethnic groups in the United States, as well as in a number of other countries with diverse cultures. This is consistent with a sociocultural model that posits that the widespread body dissatisfaction and eating disorder symptoms observed in adolescent and young girls are a function of the sociocultural ideal of thinness. Young women in the process of establishing identities are particularly vulnerable to dissa-
faction with their shape and thus pursue thinness. The extent of dieting and eating disturbances among certain ethnic minorities may be the result of the wider adoption of expectations about body shape and the ideal that thinness has come to symbolize in western culture, an ideal symbolizing self-discipline, competence, success, and sexual attractiveness. The cultural message to be slim is pervasive and constantly transmitted to girls through mass media. These messages targeted toward women also explain why symptoms of eating disorders are more common among girls than boys.

In the literature, dieting and purging have been strongly identified as risk factors for the development of eating disorders. However, for most adolescent and young adult women in the United States, the lifetime prevalence for bulimia nervosa in women is estimated to be 1.5% to 2% and for anorexia nervosa is less than 1%. Thus, although the prevalence of disordered behaviors such as purging and chronic dieting is substantial, the incidence of clinically significant eating disorders among adolescents is relatively low. Clearly, other factors and processes must interact with dieting to cause eating disorders. These risk factors may range from genetic predisposition and biological vulnerability through personality and other individual factors to familial influences. The causes of eating disorders are considered multifactorial, and little is known about the relative contribution of various causative risk factors.

During the past decade, a number of studies have explored the interrelationship (also referred to as covariation or clustering) among health behaviors in adolescents. These studies have found that frequent dieting and purging are related to other health-compromising behaviors, including tobacco use, alcohol use, marijuana use, delinquency, unprotected sexual intercourse, and suicide attempts. These findings suggest that frequent dieting and purging should not be viewed in isolation but, rather, in the broader context of health and risk-taking behaviors. Although the majority of these studies have been conducted with white adolescents, our data lend support to the idea that this is also true with Native American adolescents. The specific pathways or mediating factors leading to patterns of covariation between eating disturbances and other health-compromising behaviors are not clearly understood. Blum and colleagues noted that there seems to be a prevailing sense of hopelessness among American Indian youth, which is reflected in a progressive increase of self-injurious behaviors (eg, alcohol use, drug use, and suicide risk) from 7th to 12th grade. Dieting and other health risk behaviors may also be mediated by emotional distress. In the present study, high emotional stress was associated with both dieting frequency (girls) and purging (girls and boys).

Specific relationships have also been proposed among eating disorders, bulimic symptoms, and sexual abuse. A number of recent well-designed studies using national samples have found that childhood sexual abuse is a risk factor for bulimic behavior. In our study, both physical and sexual abuse were significantly associated with dieting frequency and purging. Sexual abuse, as well as other risk factors such as alcohol use and suicide attempts, are likely nonspecific risk factors for purging and chronic dieting.

It is well documented that Native Americans have a high prevalence of obesity in all age groups and among both sexes. Many of the leading causes of morbidity and mortality in Native American communities are thought to be associated with the rising rates of obesity. The epidemic of non–insulin-dependent diabetes mellitus among Native Americans is largely attributable to the increasing prevalence of obesity. Thus, obesity prevention and treatment programs are urgently needed in Native American communities. However, as is evidenced by our findings, as well as others, frequent dieting and purging methods are associated with negative psychosocial and health-risk behaviors. Because obesity in childhood and adolescence is a risk factor for both obesity in adults and eating disorders in adolescence, careful attention will need to be focused on treatment and prevention of obesity in adolescents, especially in minority groups. Careful attention to defining dieting is needed. Clearly, healthful methods of decreasing energy intake through selection of low-fat, nutrient-dense foods and also increased energy expenditure via physical activity are to be promoted among overweight adolescents, whereas less healthful methods of weight loss, such as fasting, purging, or the use of diet pills, are to be discouraged. Chronic energy-restrictive diets and purging methods are associated with a wide range of negative risk factors.

We had previously found that Native American adolescents who were overweight were more likely to diet frequently and to engage in unhealthy weight control practices than those adolescents who were of normal weight. Other studies have also shown that being overweight is a risk factor for eating disturbances among minority women. Furthermore, recent research suggests that low-income adolescents had higher rates of unhealthy weight control behaviors compared with higher-income adolescents. More attention needs to be placed on the importance of healthy dieting among all adolescents, especially among minority and low-income youth.

Strengths of the present study include its large sample and the broad range of variables examined. Study limitations include the use of self-reported data, which is a common limitation of many large-scale epidemiologic surveys. Although checks for internal consistency and response set bias minimize reporting errors, they are not eliminated. Our findings are not representative of all Native American youth, because some IHS service areas chose not to participate, and certain groups, such as the Navajo, were overrepresented (the Navajo is, however, the largest Indian tribe in the United States). Also, youths from urban areas were not included in the study design. About 50% of Native Americans live in urban centers. Thus, these findings may not be generalizable to youths not living on or near reservations. The generalizability of findings are also narrowed by removal of 10.5% of the original sample of Native Americans from the data set because of in-
complete or missing data. Still, this is the largest study conducted with Native American youth, and the data are important in providing a better understanding of eating disturbances among American ethnic groups and factors associated with unhealthy dieting practices. It should be pointed out that the aggregation of findings across IHS service areas does not presume homogeneity of psychosocial or risk behaviors of Native American youth. There is great diversity among individuals within an Indian tribe, as well as tremendous differences across the numerous Indian nations, each having its own traditions and cultural heritage.

Several areas require further research. There has been a lack of validated measures of dieting, eating disturbances, and unhealthy weight control practices in different ethnic subgroups. Future research on dieting needs to specify the specific behaviors (both healthy and unhealthy) associated with self-reported dieting. Future research also needs to validate self-report measures used in surveys, because it is not clear whether findings of elevated rates of eating disturbances reflect overlooked eating disturbances or whether these methods are valid in ethnic subgroups. In the present study, for example, 21% of the boys reported purging behaviors of some type. Other studies have also reported high rates of intentional vomiting among ethnic minority boys. Interpretation of these findings is difficult without validated measures on dieting and purging behaviors. Measures of acculturation would also be useful in future studies to assess whether the degree of acculturation is related to body dissatisfaction and unhealthy weight control practices. Eating disorder behaviors and attitudes such as frequent dieting, binge eating, and dissatisfaction with body image have been shown to relate to the degree of assimilation into the white culture (identification with white, middle-class values) in black women. The impact of racism on eating disturbances should also be explored. Crago and colleagues speculated that some of the factors associated with racism, such as low self-worth, social isolation as a result of racial discrimination, and feeling pressured to look or act a certain way to be accepted by the dominant culture, may increase vulnerability to eating disorders.

The high prevalence of body weight dissatisfaction, concerns about being overweight, the use of unhealthy methods of weight loss among young Native American girls, and their relationship with health-compromising behaviors point to the need for further research into the causes of eating disturbances among ethnic and racial minorities. Given the high prevalence of obesity in Native Americans, more attention needs to be placed on teaching youth about healthy ways to achieve and maintain appropriate weights. Careful monitoring should occur to ensure that there are no adverse psychological sequelae or precipitation of eating disorders associated with weight management. Interventions must be culturally sensitive, be grounded in cultural traditions that promote health and well-being, and be developed with full participation of the Native American communities.

ACKNOWLEDGMENTS

This work was supported in part by grants MCJ-273A03-03-0 and MCJ-009118-07-1 from the Maternal and Child Health Bureau.

REFERENCES


Psychosocial and Behavioral Correlates of Dieting and Purging in Native American Adolescents
Mary Story, Simone A. French, Dianne Neumark-Sztainer, Blake Downes, Michael D. Resnick and Robert W. Blum

Pediatrics 1997;99;e8
DOI: 10.1542/peds.99.4.e8

Updated Information & Services
including high resolution figures, can be found at:
/content/99/4/e8.full.html

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
/site/misc/Permissions.xhtml

Reprints
Information about ordering reprints can be found online:
/site/misc/reprints.xhtml
Psychosocial and Behavioral Correlates of Dieting and Purging in Native American Adolescents
Mary Story, Simone A. French, Dianne Neumark-Sztainer, Blake Downes, Michael D. Resnick and Robert W. Blum

Pediatrics 1997;99;e8
DOI: 10.1542/peds.99.4.e8

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/99/4/e8.full.html