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Differential Risk Factors for Unhealthy Weight Control Behaviors by Sex and Weight Status Among U.S. Adolescents

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A B S T R A C T

Purpose: To determine if previously reported risk factors for the development of unhealthy weight control behaviors differ by sex and weight status using a nationally representative longitudinal sample of adolescents followed through young adulthood.
Methods: We used nationally representative longitudinal cohort data collected from baseline (11–18 years old, 1994–1995, Wave I) and seven-year follow-up (18–24 years old, 2001–2002, Wave III) of the National Longitudinal Study of Adolescent to Adult Health (Add Health). We examined potential risk factors (adverse childhood events and adolescent family, school, body image, and mental health factors) for the development of unhealthy weight control behaviors including vomiting, fasting/skipping meals, or laxative/diuretic use to lose weight at seven-year follow-up in young adulthood.
Results: Of the 14,322 included subjects, 11% reported unhealthy weight control behavior at follow-up in young adulthood, with the highest proportion (23.7%) among overweight/obese females and the lowest proportion (3.7%) among underweight/normal weight males. All adolescent family factors were significantly associated with unhealthy weight control behaviors in underweight/normal weight females, whereas none were significantly associated in overweight/obese males. Similar trends were noted for adverse childhood events, and adolescent school and community factors. Adolescent self-perception of being overweight was associated with young adult unhealthy weight control behaviors among all subgroups.
Conclusions: Risk factors for unhealthy weight control behaviors may differ based on sex and weight status. Screening, prevention, and treatment interventions for unhealthy weight control behaviors in adolescents and young adults may need to be tailored based on sex and weight status.

IMPLICATIONS AND CONTRIBUTION

With a nationally representative sample, this study shows that family and school factors are associated with unhealthy weight control behaviors in underweight/normal weight females but not in males or in adolescents with overweight/obesity. Prevention, screening, and treatment interventions for unhealthy weight control behaviors may need to be tailored based on sex and weight status.

Unhealthy weight control behaviors including vomiting, fasting/skipping meals, or laxative/diuretic use to lose weight are common among adolescents and young adults [1], and are associated with increased risk for eating disorders [2,3], alcohol and tobacco use [4], mental health problems [5], and poor nutritional intake and quality [5]. Given these potentially serious medical and

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psychosocial consequences, unhealthy weight control behaviors represent significant public health challenges. Although traditionally thought to be limited to underweight females, unhealthy weight control behaviors are increasingly recognized among those who are overweight or obese [6] and among males [7,8].

Previous studies have identified various socioenvironmental risk factors for the development of unhealthy weight control behaviors such as family dysfunction and disconnectedness [6,9], school disconnectedness [10], and adverse childhood events [11]. Prior regional samples have reported that higher family functioning and parent connection were associated with lower odds of engaging in unhealthy weight control behaviors [6,9,12]. Furthermore, childhood physical [11] and sexual abuse [13] has been shown to be associated with the development of unhealthy weight control behaviors. Although some of these studies did examine risk by sex, they did not also disaggregate by weight status. The presentations of unhealthy weight control behaviors may differ by both sex [7] and weight status, particularly for those who are overweight or obese [14]; however, little is known about how risk for unhealthy weight control behaviors may differ when disaggregated by both sex and weight status.

Therefore, the objective of this study was to determine differences in risk during adolescence by sex and weight status for the development of unhealthy weight control behaviors in young adulthood using a nationally representative longitudinal sample (Figure 1).

Methods

Study design and sample

The National Longitudinal Study of Adolescent to Adult Health (Add Health) has followed a nationally representative cohort of youth in the United States from adolescence through adulthood [15]. The baseline sample used systematic sampling methods and implicit stratification to ensure that the high schools (n = 80) and middle schools (n = 52) selected were representative of U.S. schools with respect to region of country, urbanicity, size, type, and ethnicity. For this particular study, we used the restricted-use baseline sample (Wave I), which was collected from 1994 to 1995 when subjects were 11–18 years old, and seven-year follow-up data (Wave III), which was collected in 2001–2002 when subjects were 18–24 years old. We included subjects in the nationally representative weighted sample who had data at both baseline and seven-year follow-up (N = 14,322). Further details about the Add Health study design, coordinated by the Carolina Population Center, can be found elsewhere [15]. The University of North Carolina Institutional Review Board approved all Add Health study procedures, and the University of California, San Francisco Institutional Review Board deemed this specific project exempt.

Procedures

At baseline and seven-year follow-up, an interviewer traveled to the home or another suitable location for the potential participant. Written consent was obtained from the parent if the participant was under the age of 18 years, or from the participant if 18 years or older. Interviews lasted approximately 90 minutes and were conducted in as private an area as possible. Audio computer-assisted self-interview (baseline) and computer-assisted self-interview (follow-up) were used by participants to answer potentially sensitive questions.

Measures

Baseline measures

Demographic characteristics; socioenvironmental variables including family, school, and community factors; adverse childhood events; body image and weight factors; and mental health questions were collected during an in-home interview. Family factors included questions about family functioning and family connectedness. School and community factors included questions about how much adolescents felt cared for by friends, teachers, and other adults. Adverse childhood events included reports of childhood physical or sexual abuse or neglect. Body image and weight factors included weight perception ("how do you think of yourself in terms of weight?") and if adolescents were currently trying to lose weight. Depression score was a modified version of the Center for Disease Epidemiology Depression Scale [16]. A full list of measures is listed in Supplementary Appendix A.

Self-reported weight (in pounds) and height (in inches) were converted to kilograms and meters to calculate body mass index (BMI) using the standard formula weight (in kilograms) divided by height (in meters) squared (BMI = weight/height^2). BMI was then converted into sex- and age-specific percentiles and then classified

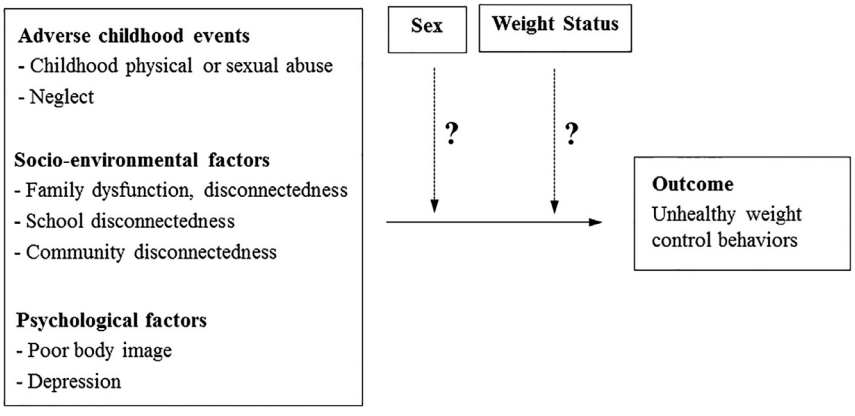

Figure 1. Conceptual framework for how adverse childhood events and adolescent socioenvironmental and psychological factors may predict young adult unhealthy weight control behaviors differently by sex and weight status.