American Journal of
Preventive Medicine

RESEARCH ARTICLE

Fifteen-year Weight and Disordered Eating Patterns Among Community-based Adolescents

Andrea B. Goldschmidt, PhD,[1] Melanie M. Wall, PhD,[2] Tse-Hwei J. Choo, MPH,[2] E. Whitney Evans, PhD,[1] Elissa Jelalian, PhD,[1] Nicole Larson, PhD, MPH, RDN,[3] Dianne Neumark-Sztainer, PhD, MPH, RD[3]

Introduction: The current study aims to characterize weight-change trajectories and their concomitant associations with prospectively measured dieting and other disordered eating behaviors among initially nonoverweight adolescents during the transition to adulthood.

Methods: A population-based sample (n=1,091) self-reported their height/weight, dieting, unhealthy weight-control behaviors, and binge eating at 5-year intervals between 1998/1999 and 2013/2014, spanning early/middle adolescence through middle/late young adulthood. Data were analyzed in 2016/2017.

Results: Groups were categorized as those who were never overweight (n=562), were overweight during at least one measurement point and gained weight more rapidly (n=246) or gradually (n=238) than their peers, or were overweight during at least one measurement point but returned to nonoverweight status by middle/late young adulthood (n=45). Thus, nearly half of adolescents became overweight during the transition to adulthood. Those who were never overweight had the lowest rates of dieting (males: F[9, 1,314]=2.54, p=0.0069, females: F[9, 1,927]=3.02, p=0.0014) and unhealthy weight-control behaviors (males: F[9, 1,313]=3.30, p=0.0005, females: F[9, 1,927]=3.02, p=0.0014), whereas some of these behaviors tended to track with weight gain in rapid and gradual weight gainers.

Conclusions: Although adolescents who are already overweight are most frequently targeted for weight-gain prevention and early intervention programs, results suggest that healthy lifestyle interventions could also benefit individuals who may be perceived as low risk for overweight in adulthood by nature of being nonoverweight in adolescence. Dieting and unhealthy weight-control behaviors tended to be associated with weight gain, suggesting that they are ineffective in addition to being potentially harmful.

Am J Prev Med 2017;▮(▮):▮▮▮–▮▮▮.

INTRODUCTION

Youth with overweight/obesity are at elevated risk for tracking excess weight status into adulthood,[1–3] and show steeper weight-gain trajectories throughout development than nonoverweight youth.[4,5] Certain weight-change trajectories may predict adverse health outcomes later in life.[6–10] However, in the current obesogenic environment, risk for overweight/obesity is not limited to those with excess weight early in life.

The transition from adolescence to young adulthood, which is characterized by increased autonomy over

From the [1]Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, The Miriam Hospital/Weight Control and Diabetes Research Center, Providence, Rhode Island; [2]Department of Biostatistics, Columbia University, New York, New York; and [3]Division of Epidemiology and Community Health, School of Public Health, University of Minnesota, Minneapolis, Minnesota

Address correspondence to: Andrea B. Goldschmidt, PhD, Department of Psychiatry and Human Behavior, Alpert Medical School of Brown University, The Miriam Hospital/Weight Control and Diabetes Research Center, 196 Richmond Street, Providence RI 02903. E-mail: andrea.goldschmidt@lifespan.org.

0749-3797/$36.00
https://doi.org/10.1016/j.amepre.2017.09.005

eating behavior related to greater financial independence and new living environments, is critical for the consolidation of health-related behaviors that may set the stage for later overweight/obesity risk.[11,12] Indeed, prospective data suggest that aging-related weight gain is steeper during young adulthood than other developmental periods in adulthood.[13–15] Moreover, early rapid weight gain during young adulthood is not only associated with steeper weight-gain trajectories later in life,[16] but also with enhanced risk for obesity-related comorbidities.[6] Thus, weight-change patterns during this transition warrant further attention.

It is important to identify behavioral factors associated with weight-change trajectories among adolescents to inform foci of prevention efforts. Previous longitudinal research suggests that dieting and disordered eating behaviors (e.g., unhealthy weight-control behaviors [UWCBs] such as skipping meals or using laxatives; binge eating) exert the strongest effects on obesity risk, whereas other diet- and activity-related patterns (e.g., energy-dense food consumption, sedentary behavior) are less consistent predictors.[17] Binge eating, dieting, and other UWCBs peak in onset during adolescence,[18,19] are associated with weight gain,[20] and have severe medical and psychosocial consequences aside from overweight/obesity.[21] Whether and how they track with weight-change patterns and associated overweight/obesity risk is currently unclear.

This study aims to characterize weight trajectories related to healthy versus unhealthy weight status in young adulthood among adolescents who were initially nonoverweight. A secondary aim is to investigate whether dieting and disordered eating behaviors are associated with distinct weight-change trajectories throughout this developmental transition. Based on the previous literature,[13–15] most adolescents were expected to gain weight during the transition to young adulthood, and dieting and disordered eating behaviors in adolescence were expected to be associated with the steepest weight-gain trajectories.[20] Findings from this study are intended to inform the selection of adolescents at initially low risk for overweight/obesity who could nevertheless benefit from healthy lifestyle interventions, as well as timing and content of prevention and early intervention programs for excess weight gain during young adulthood.

METHODS

Study Sample

Data were drawn from four waves of Project Eating and Activity in Teens and Young Adults (Project EAT), a 15-year longitudinal study of eating, activity, and weight-related factors among young people. Baseline participants were 4,746 middle and high school students in the Minneapolis/St. Paul, Minnesota metropolitan area who completed in-class surveys and anthropometric measures during early/middle adolescence (EAT-I: Time 1 [T1], ages 11–18 years) during the 1998–1999 school year.[22] Follow-up data were collected via mailed and online surveys 5, 10, and 15 years later (EAT-II: Time 2 [T2]=middle adolescence/early young adulthood, mean age=19.3 years, SD=1.7 years; EAT-III: Time 3 [T3]=early/middle young adulthood, mean age=25.2 years, SD=1.6 years; EAT-IV: Time 4[T4]=middle/late young adulthood, mean age=31.0 years, SD=1.7 years) to investigate changes in weight-related outcomes and their correlates. Among the 3,304 participants who were not overweight at T1, 443 males and 648 females self-reported their height and weight at all four time points and are included in the current analyses. Nonoverweight participants with and without complete BMI data did not differ on BMI, dieting, UWCBs, or binge eating at T1 (all $p > 0.05$). Study protocols were approved by the University of Minnesota's IRB.

Measures

The EAT survey assesses weight status, dietary and weight-control behaviors, physical activity, and associated factors. Test–retest data at T1 were collected on 161 adolescents completing identical versions of the EAT-I survey approximately 2 weeks apart[23]; likewise, test–retest reliability at T4 was collected on 103 adult participants who completed the EAT-IV survey twice within a 1- to 4-week period.

Self-reported height and weight were used to determine BMI (kg/m^2). Overweight refers to a BMI ≥85th percentile for age and sex[24] at T1 and T2, when participants were still primarily adolescents,[25,26] and a BMI ≥25 kg/m^2 at T3 and T4, when participants were adults.[27] Correlations between reported and measured BMI were $r = 0.85$ for females and $r = 0.89$ for males at T1,[28] and at T3 were $r = 0.98$ for females and $r = 0.95$ for males.[17,29] Age, gender, and race/ethnicity (dichotomized as white versus nonwhite) were self-reported. Five levels of SES were based on participant report of the highest educational attainment by either parent at T1. Eligibility for public assistance, eligibility for free/reduced-price school meals, and parental employment status were used to approximate missing SES information.[22]

Dieting 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.*[30] Responses included *never*, *one to four times*, *five to 10 times*, *more than 10 times*, and *I am always dieting* (test–retest: T1, $r = 0.71$, T4, $r = 0.77$). Responses at T1 and T4 were associated with measures of weight perceptions, weight-control attempts, importance of weight/shape, and body dissatisfaction (all $p < 0.001$). *UWCBs* were assessed with the question: *Have you done any of the following things in order to lose weight or keep from gaining weight during the past year?* Options included: *fasted*, *ate very little food*, *used a food substitute (powder or a special drink)*, *skipped meals*, *smoked more cigarettes*, *took diet pills*, *made myself vomit*, *used laxatives*, and *used diuretics*. The most commonly reported UWCBs across most time points for males and females were *ate very little food* (males, 9.5%–19.2%, females, 36.2%–45.7%) and *skipped meals* (males, 10.4%–18.7%, females, 30.5%–50.4%); 10.9%–16.9% of males and 35.0%–46.9% of females reported engaging in multiple types of UWCBs across T1 to T4. Because of low base rates of many individual UWCBs in this sample, and consistent with previous EAT research,[20]