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The Freshman 15: Is it Real?

Nicole L. Mihalopoulos, MD, MPH, **Peggy Auinger, MS**, and **Jonathan D. Klein, MD, MPH**
is with the Department of Pediatrics at the University of Utah in Salt Lake City. ***Ms Auinger*** *and* ***Dr Klein*** *are with the Department of Pediatrics at the University of Rochester, NY*

Abstract

Objective—The belief that college students gain 15 lbs during freshman year is widespread, yet the evidence for this is limited. The authors aimed to determine whether college students gain weight during freshman year.

Participants—The authors studied unmarried freshmen living on-campus at a private university in the northeastern United States.

Methods—The authors used an online survey to collect information about social behaviors and weight.

Results—The authors observed an average weight gain of 2.7 lbs. About half of the students gained weight, and 15% lost weight. Men gained more weight than did women.

Conclusions—Freshman weight gain was 5.5 times greater than that experienced by the general population.

Keywords

college students; Freshman 15; weight gain

F*reshman 15* refers to the belief that college students frequently gain 15 lbs during their freshman year. A Google search of the term in November 2006 yielded 203,000 links, and many online articles describe methods to avoid the Freshman 15.[1-3] Scientific study results are divided, with some suggesting that freshmen gain as much as 15 lbs,[4,5] whereas others report minimal weight gain.[6,7] Researchers who found weight gain attributed this to snack consumption, larger meal portions, and decreased activity. Researchers[8-10] studying men and women found that although both sexes gained weight, men appeared to gain more and experience a larger increase in body mass index (BMI). Hoffman et al[11] observed an increase in all measures of body composition between men and women but found no differences among sex or race. Many of these studies involved small sample sizes ($N < 60$), which makes determining the validity of the Freshman 15 construct a difficult task.[4,7,9] Given the dramatic increase in obesity among the US population, determining whether this time period is a risk factor for significant weight gain is important. In his study, we examined 2 hypotheses: (1) students living on campus gain weight during their freshman year and (2) freshman women gain more weight than do freshman men.

METHODS

The National College Health Assessment (NCHA), developed by the American College Health Association, provides student health information to administrators, educators and healthcare

For comments and further information, address correspondence to Dr Nicole L. Mihalopoulos, University of Utah, Department of Pediatrics, 50 North Medical Dr. 2A200 SOM, Salt Lake City, UT 84132, USA (e-mail: nicole.mihalopoulos@hsc.utah.edu)..

providers.[12] The typical response rate for NCHA is 60%. The survey requests students' current height and weight. For our study, we used weight-relevant NCHA data and added the question "What was your weight in pounds at the beginning of freshman year?" after pilot testing it with 24 undergraduate students. We conducted our study at a small, private, northeastern university in a mid-sized city.

The university's research subjects review board approved the study. Using the campus e-mail system, students consented for participation and were assured that their responses to the survey would be anonymous. Prior to our survey, all students at the university had received an e-mail invitation to participate in the NCHA. Content of the e-mail included a link to the survey, description of information to be collected (health status and health problems, risk and protective behaviors, perceived norms), and a statement assuring anonymity. Of the students who consented, we e-mailed our survey to a random sample of 582 freshmen in 2 waves. We sent the first wave to 291 students in February 2004, with a reminder sent 1 week later. In April of the same year, we sent the survey to another 291 students, but because of a conflict with another survey from the registrar's office, we did not send this group a reminder.

The main outcomes we wanted to observe and analyze were change in weight and BMI from the beginning of the freshman year to the time of the survey (about 7 months). We calculated participants' current and initial BMIs using self-reported height and weight.

We included survey data in analyses if the student was unmarried, lived on campus, and completed all questions pertaining to height, weight, age, sex, and race or ethnicity. We excluded responses from international students, those living in sorority or fraternity housing, and those reporting "other" for race or ethnicity. We also excluded respondents with BMI < 10 because of the implausibility of the measurement.

We analyzed differences in weight gain and BMI for significance using Student's *t* test and analyses of variance (ANOVAs) with $\alpha = .05$. Because of the small numbers of respondents from black, Hispanic, and Native American ethnicities, we combined these groups into one group for analysis.

RESULTS

We received responses from 131 of the 582 freshmen, of which 125 were eligible for analysis (21.5%). Their average age was 18.4 years (*SD* = 0.5). Respondents were more likely to be white (84.8%)—with 10.4% Asian and 4.8% black and Hispanic—and female (66.4%) than was the freshman class.

We observed a significant increase in weight for the freshmen in our study (*M* = 2.7 lbs, *SD* = 6.4; 95% confidence interval [CI] = 1.6−3.9). Men's weight increased by 3.7 lbs (95% CI = 2.2−5.2), whereas women's increased by 1.7 lbs (95% CI = 0−3.5; *p* = .09). We observed wide variations among the group, with weight changes ranging from −5 to +20 pounds. About half (51.3%) of the students gained weight (range = 1−20 lbs). The average gain for students in this group was 7.4 lbs (*SD* = 4.5; 95% CI = 6.3−8.5), with men's weight increasing by 7.4 lbs (range = 6.0−8.8) pounds and women's by 7.5 lbs (range = 5.6−9.4; *p* = .90). One-third of respondents experienced no weight change, and 15% (*n* = 19) lost weight. Average weight loss was 7.8 lbs (*SD* = 5.7, 95% CI = 2.5−13.0) for men and 7.0 lbs (*SD* = 3.4, 95% CI = 4.7−9.3) for women (*p* = .71; see Figure 1) We found no relationship between weight change and race or ethnicity.

Respondents with BMI < 25 at the beginning of the year gained an average of 3.3 lbs (*SD* = 6.1), whereas those with BMI ≥ 25 gained an average of 0.8 lbs (*SD* = 7.5; *p* = .07; see Table 1). Average BMI at the start of freshman year was 23.3 (*SD* = 4.7) and increased to 23.7 (*SD* = 4.6) by the time of survey (*p* < .05).

COMMENT

Our results suggest that college freshmen do gain weight; however, the legendary Freshman 15 was rare among respondents in this study (5% gained > 15 lbs). The average gain for the entire group was 2.7 lbs. It should be noted, however, that this rate of weight gain (175 g/month) is nearly 6 times that reported for the general population (about 32 g/month).[5] For the more than 50% of students who gained weight (about 7 lbs), the average was nearly 425 g/month (11.22 lbs/y). If such a rate were sustained for several years, many of the students would become obese (BMI ≥ 30).

This study differs from the previously discussed studies in that we enrolled a larger number of students and used an electronic survey to obtain self-reported height, weight, and demographic data. Electronic surveys have been shown to be valid for self-reported data collection,[13-15] with results similar to paper- or mail-based surveys.[13,16] Electronic surveys also have been found to be representative of the population being studied despite lower response rates of about 35% to 40%.[17]

There are several limitations to this study. Although researchers have validated the accuracy of self-reported height and weight data,[17] women may underestimate weight by 2.1 kg (4.6 lbs).[18] Thus, the weight and BMI changes we calculated in this study may be underestimates.[18,19] Heavier people may underestimate their weight, and height tends to be overreported[18,19]; thus, the weight and BMI changes we calculated may be low estimates. The response rate was lower than we expected for electronic surveys, particularly among men and minorities, and likely was because we did not send a reminder to wave 2 participants. Nonresponders may have had different nutrition and physical activity behaviors that affected weight change. Also, the use of data from a single institution where most respondents were white limits generalizability beyond private residential universities with predominantly white student populations. Last, we did not compare the weight patterns of freshmen with those of another group of similarly aged individuals not in college. Such a comparison could have allowed determination of how being in university affects weight change. Georgiou et al[20] compared students with nonstudents aged 18 to 24 years and found that nonstudents gained more weight than did students. The authors attributed this to healthier diets and more exercise among the students.

We hypothesized that women would gain more weight than would men, but this was not the case. Our findings were consistent with previous studies.[8-10]

These findings demonstrate that, although freshman college students gain weight, few gain the legendary 15 lbs. The students' weight trajectory does, however, suggest opportunities for health promotion during the transition from high school to college dorm life. Future researchers should concentrate on the mechanisms of freshman weight gain and on interventions to prevent unhealthy weight gain. A better understanding of these issues could contribute to combating the obesity epidemic among young people.

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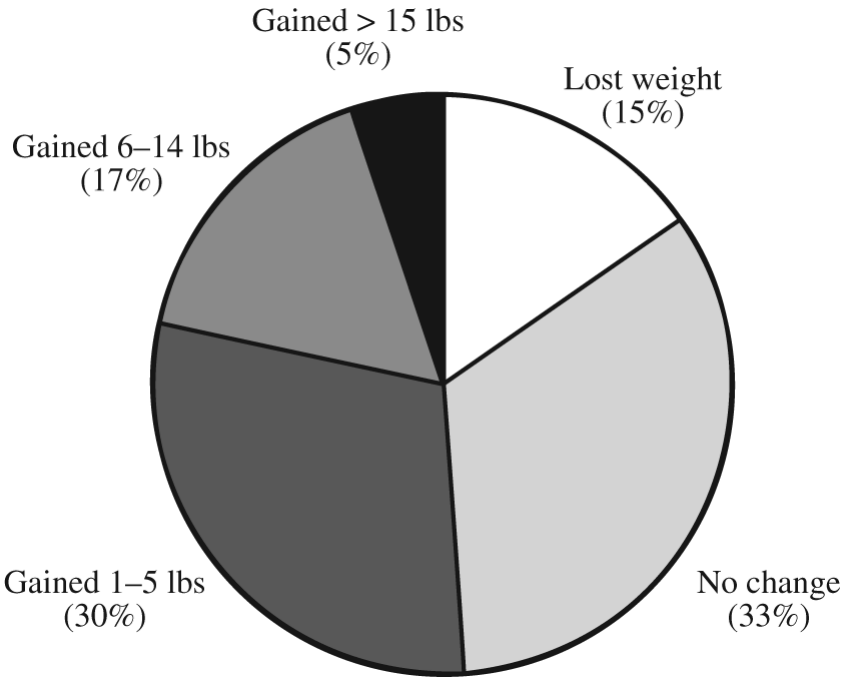

FIGURE 1.
Distribution of weight change.

TABLE 1

Average Weight Change Stratified by Body Mass Index (BMI) at Start of Freshman Year

BMI (kg/m^2)	Weight change (lb)		
	M	**Range**	***n***
	Men		
< 18.5	7.1	2.3−12.0	6
18.5−24.9	4.4	2.6−6.3	38
25.0−29.9	0.8	−2.1−3.8	8
≥ 30.0	1.5	−3.5−6.5	12
	Women		
< 18.5	1.1	−12.4−14.5	3
18.5−24.9	2.1	0.1−4.0	49
25.0−29.9	0.1	−5.4−5.5	10
≥ 30.0	—	—	0