

ORIGINAL RESEARCH

Health Behaviors of the Young Adult U.S. Population: Behavioral Risk Factor Surveillance System, 2003

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Abstract

Introduction

Health-risk behaviors such as eating poorly, being physically inactive, and smoking contribute to the leading causes of morbidity and mortality in the United States and are often established during adolescence and young adulthood. The objectives of this study were to characterize the health-risk behaviors of young adults (aged 18–24 years) using a large population-based survey of Americans and to determine if behaviors of this group differ by weight category, as assessed by body mass index (BMI).

Methods

Prevalence estimates for selected health-risk behaviors were calculated for respondents aged 18 to 24 years to the 2003 Behavioral Risk Factor Surveillance System (BRFSS). Respondents were categorized by BMI, and comparisons between sex and race and ethnicity were made within the overweight and obese categories.

Results

More than three quarters (78.4%) of respondents consumed fewer than five fruits and vegetables per day, 43.2% reported insufficient or no physical activity, 28.9% were

current smokers, 30.1% reported binge drinking, and 11.9% reported frequent mental distress. One quarter (26.1%) of respondents were overweight, and 13.6% were obese. Of obese young adults, 67.2% reported that they currently were trying to lose weight; however, only 24.3% reported having received professional advice to lose weight. More obese women (34.2%) than obese men (16.7%) reported having received professional advice to lose weight. Only 19.1% of obese non-Hispanic white respondents had received professional advice to lose weight compared with 28.0% of obese Hispanic respondents and 30.6% of obese non-Hispanic black respondents.

Conclusion

Many young adults engage in unhealthy behaviors, and differences exist in health-risk behaviors by BMI category and specifically by sex and race and ethnicity within BMI categories. The transition from adolescence to adulthood may be an opportune time for intervening to prevent future chronic disease.

Introduction

Chronic conditions such as heart disease, stroke, cancer, and diabetes account for most health problems of middle-aged and older American adults (1). Heart disease, cancer, and stroke are the leading causes of death in the United States (2). Known modifiable health-risk behaviors associated with these leading causes of morbidity and mortality include smoking cigarettes, having a poor diet, and being physically inactive (3–5). Being overweight or obese puts one at risk for many chronic conditions (6,7). Despite this increased risk, the prevalence of obesity among adults in the United States is high, with recent estimates of 31.1%

for men and 33.2% for women (8).

Increases in obesity prevalence were observed during the past decades for both sexes, all racial and ethnic groups, and all age groups. For example, obesity increased by 69.9% among adults aged 18 to 29 years during the 1990s (9). Recently released national estimates from 1999 through 2004 indicate that the prevalence of overweight continued to increase among children and adolescents, from 13.9% during 1999–2000 to 17.1% during 2003–2004 (8). Research suggests that being overweight at a young age increases the risk of obesity and other risk factors for chronic disease in adulthood (10–13).

Health-risk behaviors such as being physically inactive, eating poorly, and smoking are generally established during adolescence and young adulthood (14). Early intervention (e.g., during the transition from adolescence to adulthood) may be most opportune for preventing chronic diseases, including coronary heart disease and metabolic syndrome (15). To develop and target prevention efforts for young adults at risk of obesity and future chronic disease, we must understand the health-risk behaviors of this group. Many previous studies examined risk behaviors of adults, but few focused specifically on young adults. Therefore, the objectives of this study were to use a large population-based survey of Americans to characterize the health-risk behaviors of young adults (aged 18–24 years) and to determine whether the behaviors of this group differ by weight categories, as assessed by body mass index (BMI).

Methods

We analyzed data collected during the 2003 Behavioral Risk Factor Surveillance System (BRFSS) for adults aged 18 to 24 years. The BRFSS is a state-based telephone survey conducted by state health departments in collaboration with the Centers for Disease Control and Prevention (CDC). All states, the District of Columbia, Puerto Rico, Guam, and the U.S. Virgin Islands participate in this surveillance system. The BRFSS uses a multistage cluster design based on random-digit-dialing (RDD) methods to select a representative sample from each state's noninstitutionalized civilian population aged 18 years and older. Data collected from each state are pooled to produce nationally representative estimates (16). A detailed description of BRFSS survey methods is published elsewhere (17).

The factors selected for analysis in this study were general health status, mental health status, smoking status, reported binge drinking, fruit and vegetable intake, physical activity status, current weight control activities, and professional advice about weight management.

General health status was determined by responses to the question, "Would you say that in general your health is excellent, very good, good, fair, or poor?" We classified respondents into two groups: 1) respondents with fair or poor health and 2) respondents with good, very good, or excellent health.

To determine mental health status, respondents were asked, "Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?" Respondents were classified as having 1) frequent mental distress if they answered 14 or more days (the 14-day minimum was based upon documented research [18]), 2) few days of mental distress if they answered 1 to 13 days, and 3) no mental distress if they answered 0 days.

Respondents were classified as 1) current smokers if they said they had smoked at least 100 cigarettes in their lives and currently smoked on at least some days, 2) former smokers if they had smoked at least 100 cigarettes in their lives but currently did not smoke, or 3) never smokers if they had not smoked at least 100 cigarettes in their lives. Participation in binge drinking was defined as having five or more alcoholic beverages on an occasion during the past 30 days (19). Respondents were classified as either 1) having reported binge drinking or 2) not having reported binge drinking.

An abbreviated food frequency questionnaire (six questions) that asked about usual fruit and vegetable intake was used to classify respondents into two groups: 1) respondents who consumed fewer than five fruits and vegetables per day and 2) respondents who consumed five or more fruits or vegetables per day.

In the physical activity section of the questionnaire, respondents were asked questions about the frequency and duration of both moderate and vigorous leisure-time physical activities performed in a usual week (20). Answers to these questions were used to create three physical activity categories: 1) met recommendations, 2) insufficient physi-

cal activity, and 3) inactive. Physical activity status was based on CDC recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week (21). Respondents were classified as 1) having met recommendations if they reported meeting the recommendation for moderate- or vigorous-intensity physical activity, 2) having insufficient physical activity if they reported engaging in some physical activity but meeting neither of the recommendations, and 3) being inactive if they reported engaging in no physical activity.

Information about professional advice on weight and weight control activities, such as dietary changes and increased physical activity, was gathered from responses to questions in the BRFSS weight control module. All respondents were asked, “Are you now trying to lose weight?” Participants who responded yes were classified as trying to lose weight. Participants who responded no were asked, “Are you now trying to maintain your current weight, that is, to keep from gaining weight?” Participants who responded yes were classified as trying to maintain weight. Participants who responded no to this question were classified as engaging in no weight control activities.

Respondents who said they were trying either to lose weight or to maintain their current weight were asked additional questions about specific weight control activities, including “Are you eating either fewer calories or less fat to lose weight or to keep from gaining weight?” Possible responses to this question included, yes, fewer calories,” “yes, less fat,” and “yes, fewer calories and less fat.” Respondents were grouped into one of three categories based on their answers: 1) fewer calories, 2) less fat, and 3) neither. Because calorie reduction was the major weight control behavior that we were interested in, we grouped together respondents who said they were eating either fewer calories or both fewer calories and less fat into one category (i.e., fewer calories). Participants who indicated they were trying either to lose weight or to maintain their current weight were additionally asked, “Are you using physical activity or exercise to lose weight or keep from gaining weight?” Participants were classified as having increased physical activity or not having increased physical activity based on their responses. All respondents were asked, “In the past 12 months, has a doctor, nurse, or other health professional given you advice about your weight?” Possible responses were “Yes, lose weight,” “Yes, gain

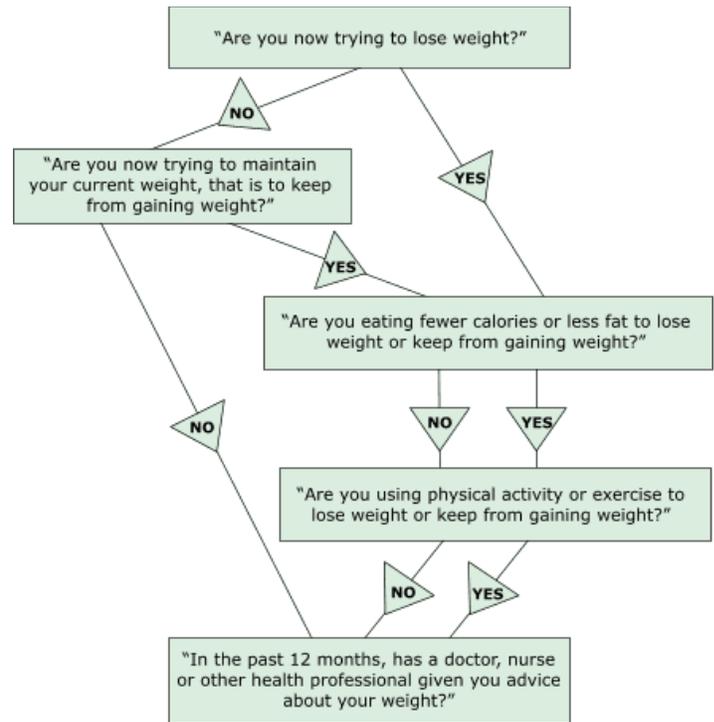


Figure. Flow of questions in the weight control module, BRFSS, 2003.

weight,” “Yes, maintain current weight,” or “No” (Figure 1). Using responses to this question, participants were grouped into four possible categories under professional advice on weight: 1) lose, 2) gain, 3) maintain, 4) none.

Self-reported weight and height were used to calculate BMI. Participants were classified as normal weight if their BMI was less than 25.0 kg/m². We included 751 (4.3%) underweight respondents who had a BMI lower than 18.5 kg/m² in the normal weight classification, and we continued to call this category *normal weight*. Participants were classified as overweight if their BMI was between 25.0 kg/m² and 29.9 kg/m² and obese if their BMI was 30 kg/m² or higher (7).

Demographic variables of interest were sex, race and ethnicity, education level, marital status, and employment status. Because this analysis focused on young adults who could be in the process of obtaining a degree, we used two categories of attained education: high school graduate or less than a high school education. Marital status was categorized as married, divorced, widowed, separated, never married, or member of an unmarried couple. Respondents

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were grouped into one of five employment categories: employed, student, out of work, homemaker, or other.

In 2003, 18,359 BRFSS respondents were aged 18 to 24 years. Because every respondent did not answer every question, the sample sizes for selected variables varied. Pregnant women were excluded from all BMI-specific analyses. Data were weighted (by age, sex, and race and ethnicity to the 2003 population estimates for each state) and analyzed by using SAS (SAS software version 8.02, SAS Institute, Inc, Cary, NC) and SUDAAN (SUDAAN software version 9, RTI International, Research Triangle Park, NC) statistical software to account for the complex sampling design. Univariate analyses, prevalence estimates, and 95% confidence intervals (95% CIs) were used to examine the demographics and selected health-risk behaviors of young adults. Bivariate cross-tabulations were used to describe and compare young adults who were classified as normal weight, overweight, or obese. To further describe the overweight and obese young adult population, sex- and race/ethnicity-specific cross-tabulations of all variables were done within these categories. Only statistically significant differences in health behaviors for each sex and racial and ethnic group are presented in this article ($\alpha = .05$).

Results

Most of the total respondents in our study population were male (52.2%), non-Hispanic white (60.2%), high school graduates (84.8%), never married (70.9%), and employed for wages (55.7%) (Table 1). Approximately 26% reported that they were students at the time of the survey.

Although most of these young adults reported good, very good, or excellent health, 8.4% reported that in general their health was fair or poor. In addition, 11.9% of young adults reported frequent mental distress. The prevalence of current smoking was 28.9%, and 30.1% of respondents reported binge drinking in the previous 30 days.

Responses to questions related to nutrition and physical activity revealed that 78.4% of young adults consumed fewer than five fruits and vegetables each day. Most (56.8%) met the CDC physical activity recommendations, but 33.2% of respondents engaged in insufficient physical activity and 10.0% of respondents were inactive. Most respondents were classified as normal weight (60.3%).

However, the prevalence of overweight was 26.1%, and the prevalence of obesity was 13.6%.

Analysis of BMI categories by race and ethnicity showed that the distribution is similar to that of the overall BRFSS sample, with the greatest proportion of each category being non-Hispanic white (Table 2). Although the proportions of young adults in each BMI category who were non-Hispanic white and Hispanic were consistent, the proportions of non-Hispanic black respondents in the overweight and obese categories were higher than the proportion of non-Hispanic black respondents in the normal weight category. This difference prompted us to separately examine the racial and ethnic groups to determine the distribution of BMI categories within each. The data, which are not displayed in the tables, showed that 20.8% (95% CI, 17.9–23.7) of non-Hispanic black participants were obese compared with 12.0% (95% CI, 11.0–12.9) of non-Hispanic white participants, 14.5% (95% CI, 11.8–17.3) of Hispanic participants, and 13.2% (95% CI, 9.7–16.8) of participants from other non-Hispanic races.

Significant differences in weight control activities among young adults were observed between BMI categories (Table 2). Although the majority of overweight and obese young adults reported trying to lose weight or maintain their weight, 19.9% of overweight respondents and 11.8% of obese respondents were not attempting to do either. Among obese young adults who were trying to lose weight or maintain their weight, 50.8% (95% CI, 46.8–54.8) reported making a dietary change to consume fewer calories compared with 43.1% (95% CI, 40.1–46.0) of overweight young adults. A high percentage of overweight (91.2%; 95% CI, 89.8–92.5) and obese (73.2%; 95% CI, 69.8–76.4) young adults reported not having received any professional advice in the past year about their weight.

Table 3 summarizes the sex-specific analyses of the overweight and obese young adult populations, and these analyses reveal statistically significant differences. A greater proportion of overweight women (17.6%; 95% CI, 14.7–20.9) reported frequent mental distress compared with overweight men (9.9%; 95% CI, 7.8–12.5), and a greater proportion of obese women (17.3%; 95% CI, 14.2–20.8) reported frequent mental distress compared with obese men (8.7%; 95% CI, 6.2–12.1). Additionally, a greater percentage of overweight women (39.9%; 95% CI, 36.1–43.8) reported insufficient physical activity com-

pared with overweight men (27.0%; 95% CI, 24.0–30.2), and a greater percentage of obese women (43.7%; 95% CI, 39.1–48.5) reported insufficient physical activity compared with obese men (33.2%; 95% CI, 28.5–38.4).

Weight control activities also differed by sex in both the overweight and obese groups of young adults. The prevalence of trying to lose weight was 68.3% (95% CI, 64.4–71.9) for overweight women compared with 32.7% (95% CI, 29.5–36.1) for overweight men and 76.2% (95% CI, 71.9–80.0) for obese women compared with 60.1% (95% CI, 54.7–65.3) for obese men. Statistically significant differences were observed by sex when reported professional advice on weight was examined for the overweight and obese groups of young adults. Although a large portion of overweight and obese young adults of both sexes reported that they had not received professional advice regarding their weight, a greater percentage of obese women (34.2%; 95% CI, 29.8–38.8) reported having received advice to lose weight compared with 16.7% (95% CI, 12.7–21.6) of obese men.

Table 4 summarizes race- and ethnicity-specific analyses for the overweight and obese groups. These analyses indicate that among these young adults, overweight non-Hispanic white respondents have a higher prevalence of current smoking (36.2%; 95% CI, 33.2–39.3) than non-Hispanic black respondents (22.1%; 95% CI, 16.7–28.6) and Hispanic respondents (18.6%; 95% CI, 13.7–24.8). A higher percentage of non-Hispanic black respondents in both the overweight category (15.2%; 95% CI, 11.1–20.4) and obese category (15.9%; 95% CI, 9.8–24.7) reported no physical activity compared with overweight (4.1%; 95% CI, 3.2–5.2) and obese (6.3%; 95% CI, 4.7–8.5) non-Hispanic white respondents and overweight (5.8%; 95% CI, 3.2–10.5) and obese (5.7%; 95% CI, 2.4–12.9) young adult non-Hispanic respondents of other races.

Differences in the prevalence of reported professional advice regarding weight were also observed by race and ethnicity. Among young adults who were obese, 19.1% (95% CI, 16.0–22.8) of non-Hispanic white respondents reported having received professional advice to lose weight, compared with 28.0% (95% CI, 19.5–38.5) of Hispanic respondents, 30.6% (95% CI, 23.7–38.5) of non-Hispanic black respondents, and 35.3% (95% CI, 22.0–51.2) of respondents of other non-Hispanic races.

Discussion

In this population-based study of young U.S. adults, we found that many individuals are putting themselves at risk for future disease by engaging in unhealthy behaviors. Of total respondents aged 18 to 24 years, one quarter currently smoked, approximately one third engaged in binge drinking during the past 30 days, three fourths ate fewer than five fruits and vegetables each day, and about half failed to engage in adequate levels of physical activity. We also found that one quarter of respondents were overweight and one tenth of respondents were obese. Our data suggest that educational efforts aimed at health behavior modification should include a focus on these specific factors for the young adult population if we are to be successful at curtailing ongoing chronic disease increases in this country.

Among respondents who were obese, two thirds reported they were currently trying to lose weight; however, only one quarter had been advised by a health-care professional in the past year to lose weight. Analysis by BMI category revealed differences by sex and race and ethnicity. For example, whereas one third of obese women had been advised to lose weight, only one fifth of obese males had been given similar advice. A statistically significant greater number of obese non-Hispanic black and Hispanic respondents had been advised by a professional to lose weight compared with the number of obese non-Hispanic white respondents. Non-Hispanic white participants made up the majority of respondents who were obese in this population of young adults. However, we also examined each racial and ethnic group separately to examine the proportion of obese young adults within each group. Our findings showed that the percentage of obese non-Hispanic black respondents was greater than the percentage of obese Hispanic and non-Hispanic white respondents. Given this disparity, it is encouraging that a higher proportion of non-Hispanic black respondents were advised to lose weight; however, no statistically significant differences in weight control activities were observed for these obese young adults compared with young adults within the other racial and ethnic groups. Further confirmatory research on this finding is needed.

Previous reports have shown that the prevalence of eating fewer than five fruits and vegetables per day is 77% in the general adult population (22). In this study, we found a similarly high prevalence (78.4%) for young adults. We also found that a higher proportion of young adults (28.9%)

are current cigarette smokers than is estimated for the entire adult population (22.0% in 2003). This finding is consistent with previous studies showing that smoking rates decrease with age (23-25). An increase in the prevalence of frequent mental distress in the general adult population has been reported, from 8.4% in 1993 to 10.1% in 2001 (18). Our analysis of frequent mental distress specifically among young adults reveals a higher prevalence (11.9%). A recent study analyzing binge drinking reports a prevalence among all adults of 14.8% (26). The prevalence of binge drinking found among young adults in this study, 30.1%, was twice as high as that of the general adult population.

The prevalence of self-reported overweight and obesity in the young adult population, about 40%, is not as high as the approximately 56% prevalence in the general adult population (27); however, it is of particular concern because overweight and obesity at younger ages have been shown to be associated with increased risk of chronic conditions, including sustained overweight and obesity, later in adulthood (10,11). Examining the specific health-risk behaviors of overweight and obese young adults provides information that may be useful for tailoring public health programs and interventions for this age group.

Weight control activities differed among normal weight, overweight, and obese young adults, specifically between the sexes. Overweight and obese women were significantly more likely than men to report trying to lose weight. This difference in the sex-specific prevalence of weight control activities has also been shown previously for the entire adult population (28). Dieting has been found to be more common among women than among men, and women are more likely than men to have histories of weight loss and attempted weight loss (29). In our study of young adults, men who were overweight or obese were more likely than women to meet physical activity recommendations. These particular estimates from our study were based only on weight status and may not be related to desire to lose weight. However, previous studies have shown that women desiring to lose weight are more likely to diet, whereas men desiring to lose weight are more likely to use exercise (30).

Other sex-specific differences, most notably in mental health status and the receipt of professional advice on weight, were observed in this study among overweight and obese young adults. Overweight and obese women

were more likely than men to report frequent mental distress. Although data on the exact nature of the mental distress are not available, it is possible that the societal pressure to lose weight and be thin, which is more directly focused on women, may contribute to adverse mental health consequences among young adult women who are overweight or obese.

Although very high percentages of both men and women in the overweight and obese categories reported that they had not received any advice regarding their weight, women were more likely than men to report having received advice to lose weight. This finding may once again reflect the fact that societal pressures to lose weight and to achieve an ideal physique are more heavily focused on women than men. On the other hand, these data could suggest that women are simply more likely to recall having received professional advice. It is possible that weight-loss-related advice has a greater importance for women, once again reflecting the standards that are set by society. However, these findings could also reflect differences in health-care-seeking behaviors between women and men: respondents who reported they had not received advice about their weight could have either seen a doctor and received no advice or simply not had a health-care check-up within the past year. Prior research has shown that young adult men have a higher prevalence (33%) of not having visited a physician in the past year compared with young adult women (7%) (31).

Previous studies have indicated that multiple factors may influence health-care professionals' decisions to give or withhold advice about weight (32,33). These factors include weight-loss-related conditions or observed clinical benefit from weight loss for the specific patient, belief in the ability of patients to make lifestyle changes, or the amount of contact the provider has with the patient. Studies have shown that receiving professional advice to lose weight may increase attempted weight loss among overweight adults (28,34). Therefore, health care professionals need to further encourage young adults, regardless of sex or race, to manage their weight by adopting healthier lifestyles that include good dietary habits and adequate physical activity.

Our study has several limitations. Our estimates of the overweight and obese young adult populations may be conservative because validated studies of self-reported weight and height have shown that overweight respondents tend

to underestimate their weight, and all respondents tend to overestimate their height (35,36). Telephone surveys are less likely to reach people of lower socioeconomic status, which is a risk factor shown to be associated with overweight and obesity (37). Telephone surveys also have become increasingly limited in their ability to reach the younger adult population for several reasons. First, research has shown that younger adults are more likely to be living in wireless-only households; therefore, this population is less likely to be included in the BRFSS, which does not include cellular telephones in the RDD sampling frame (38). Second, younger adults living on college or university campuses are less likely to be reached because institutions are not included in the RDD sampling frame. The overall CASRO response rate for all adults for the 2003 survey was 53.2% (39); however, the specific rate for our age group is not available. These factors may result in possible limited generalizability to all 18- to 24-year-old adults. Given these limitations, further supplemental research using alternative data sources that specifically target the young adult age group (e.g., university surveys) may be warranted. Finally, respondents were asked to report whether they had received professional advice regarding their weight. However, data regarding interaction with health care professionals were not available, so we were unable to control for people who had not had a health care checkup within the past year.

Public health awareness campaigns and interventions focused on the young adult population should continue to address inadequate nutrition, smoking, frequent mental distress, and binge drinking because these are risk factors that have been shown to be prevalent in this population. Ideally, behavioral risk factors should be identified and modified at an early age to help reduce chronic conditions that contribute to the leading causes of morbidity and mortality among adults. As this study shows, the young adult population exhibits a variety of sex-specific risk factors for overweight and obesity. These factors should be understood and addressed when targeting specific behavioral modification interventions for the young adult population.

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Tables

Table 1. Characteristics of Young Adult Participants (Aged 18–24 y), Behavioral Risk Factor Surveillance System, 2003

Characteristic	No. Respondents (N=18,359)	Weighted N	Weighted % (95% CI)
Sex			
Male	7,812	14,997,089	52.2 (50.9-53.5)
Female	10,547	13,740,911	47.8 (46.5-49.1)
Race and ethnicity			
Non-Hispanic white	12,272	17,225,894	60.2 (58.9-61.4)
Non-Hispanic black	1,967	3,321,510	11.6 (10.8-12.4)
Hispanic	2,426	5,620,964	19.6 (18.5-20.8)
Other race or ethnicity, non-Hispanic	1,594	2,464,200	8.6 (7.8-9.4)
Education level			
<High school graduate	2,517	4,367,330	15.2 (14.2-16.2)
High school graduate	15,825	24,346,787	84.8 (83.8-85.8)

CI indicates confidence interval.

^aCurrent smokers had smoked at least 100 cigarettes in their lives and currently smoked on at least some days; former smokers had smoked at least 100 cigarettes in their lives but currently did not smoke; and never smokers had not smoked at least 100 cigarettes in their lives.

^bParticipation in binge drinking was defined as having five or more alcoholic beverages on an occasion during the past 30 days.

^cPhysical activity status based on Centers for Disease Control and Prevention’s recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

^dWomen who stated that they were pregnant were excluded from these analyses. Respondents with a BMI <18.5 kg/m² were included in the normal weight category.

^eSample sizes within categories may not all total 18,359 because of missing data.

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Table 1. (continued) Characteristics of Young Adult Participants (Aged 18–24 y), Behavioral Risk Factor Surveillance System, 2003

Characteristic	No. Respondents (N=18,359)	Weighted N	Weighted % (95% CI)
Marital status			
Married	3,641	4,853,889	16.9 (16.0-17.8)
Divorced	281	282,293	1.0 (0.8-1.2)
Widowed	28	41,104	0.1 (0.05-0.2)
Separated	288	355,256	1.2 (1.0-1.5)
Never married	12,388	20,335,559	70.9 (69.7-72.0)
Member of unmarried couple	1,704	2,831,619	9.9 (9.1-10.6)
Employment status			
Employed	10,682	15,958,094	55.7 (54.4-57.0)
Student	4,482	7,548,197	26.3 (25.2-27.5)
Out of work	1,701	3,212,245	11.2 (10.3-12.2)
Homemaker	1,109	1,430,567	5.0 (4.5-5.5)
Other	326	510,925	1.8 (1.5-2.2)
General health status			
Excellent, very good, or good	16,897	26,295,101	91.6 (90.8-92.4)
Fair or poor	1,436	2,409,687	8.4 (7.6-9.2)
Mental health status			
No mental distress (0 days within past 30 days)	9,557	14,643,504	51.5 (50.2-52.8)
Few days of mental distress (1-13 days within past 30 days)	6,337	10,382,477	36.5 (35.3-37.8)
Frequent mental distress (≥ 14 days within past 30 days)	2,203	3,392,217	11.9 (11.1-12.8)
Smoking status^a			
Current smoker	5,243	8,301,521	28.9 (27.8-30.1)
Former smoker	1,915	2,574,180	9.0 (8.3-9.6)
Never smoker	11,174	17,828,877	62.1 (60.9-63.3)
Reported binge drinking^b			
No	12,920	19,840,192	69.9 (68.7-71.1)
Yes	5,235	8,540,960	30.1 (28.9-31.3)

CI indicates confidence interval.

^aCurrent smokers had smoked at least 100 cigarettes in their lives and currently smoked on at least some days; former smokers had smoked at least 100 cigarettes in their lives but currently did not smoke; and never smokers had not smoked at least 100 cigarettes in their lives.

^bParticipation in binge drinking was defined as having five or more alcoholic beverages on an occasion during the past 30 days.

^cPhysical activity status based on Centers for Disease Control and Prevention's recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

^dWomen who stated that they were pregnant were excluded from these analyses. Respondents with a BMI < 18.5 kg/m² were included in the normal weight category.

^eSample sizes within categories may not all total 18,359 because of missing data.

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Table 1. (continued) Characteristics of Young Adult Participants (Aged 18–24 y), Behavioral Risk Factor Surveillance System, 2003

Characteristic	No. Respondents (N=18,359)	Weighted N	Weighted % (95% CI)
Fruit and vegetable intake			
<5 per day	14,359	22,022,919	78.4 (77.3-79.5)
≥5 per day	3,768	6,058,513	21.6 (20.5-22.7)
Physical activity status^c			
Met recommendations	10,065	15,620,524	56.8 (55.5-58.1)
Insufficient activity	5,809	9,148,654	33.2 (32.0-34.5)
Inactive	1,688	2,750,368	10.0 (9.2-10.8)
Body mass index^d			
Normal weight (<25.0 kg/m ²)	10,539	16,470,603	60.3 (59.0-61.6)
Overweight (25.0-29.9 kg/m ²)	4,551	7,121,455	26.1 (24.9-27.3)
Obese (≥30.0 kg/m ²)	2,461	3,703,089	13.6 (12.7-14.5)
Total^e	18,359	2,873,800	13.1 (12.8-13.4)

CI indicates confidence interval.

^aCurrent smokers had smoked at least 100 cigarettes in their lives and currently smoked on at least some days; former smokers had smoked at least 100 cigarettes in their lives but currently did not smoke; and never smokers had not smoked at least 100 cigarettes in their lives.

^bParticipation in binge drinking was defined as having five or more alcoholic beverages on an occasion during the past 30 days.

^cPhysical activity status based on Centers for Disease Control and Prevention's recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

^dWomen who stated that they were pregnant were excluded from these analyses. Respondents with a BMI <18.5 kg/m² were included in the normal weight category.

^eSample sizes within categories may not all total 18,359 because of missing data.

Table 2. Prevalence of Health Indicators for Young Adults (Aged 18–24 y)^a, by Characteristic and Body Mass Index Category^b, Behavioral Risk Factor Surveillance System, 2003

Characteristic	Normal Weight Respondents, % (95% CI)	Overweight Respondents, % (95% CI)	Obese Respondents, % (95% CI)	Total, % (95% CI)
Sex				
Male	50.7 (49.0-52.5)	64.3 (61.8-66.6)	56.4 (52.9-59.9)	55.0 (53.7-56.3)
Female	49.3 (47.5-51.0)	35.7 (33.4-38.2)	43.6 (40.1-47.1)	45.0 (43.7-46.3)
Race and ethnicity				
Non-Hispanic white	64.3 (62.5-66.0)	59.4 (56.7-62.1)	54.6 (50.9-58.3)	61.8 (60.4-63.1)
Non-Hispanic black	9.9 (8.9-11.0)	12.6 (11.1-14.4)	18.3 (15.7-21.1)	11.7 (11.0-12.6)
Hispanic	16.4 (15.0-18.0)	20.2 (17.8-22.9)	18.3 (15.1-22.1)	17.7 (16.5-18.9)
Other race or ethnicity, non-Hispanic	9.4 (8.3-10.7)	7.7 (6.2-9.5)	8.8 (6.6-11.6)	8.9 (8.0-9.8)
Education level				
<High school graduate	13.3 (12.1-14.6)	13.9 (12.0-16.1)	16.1 (13.5-19.1)	13.8 (12.9-14.8)
High school graduate	86.7 (85.4-87.9)	86.1 (83.9-88.0)	83.9 (80.9-86.5)	86.2 (85.2-87.1)
Mental health status				
No mental distress (0 days within past 30 days)	48.6 (46.9-50.3)	53.5 (50.9-56.2)	54.9 (51.2-58.5)	50.7 (49.4-52.1)
Few days of mental distress (1-13 days within past 30 days)	39.7 (38.0-41.5)	33.8 (31.4-36.4)	32.7 (29.3-36.2)	37.3 (36.0-38.6)
Frequent mental distress (≥14 days within past 30 days)	11.7 (10.6-12.8)	12.7 (10.9-14.7)	12.4 (10.4-14.8)	12.0 (11.2-12.9)
Smoking status^c				
Current smoker	29.8 (28.3-31.4)	30.2 (27.8-32.6)	29.9 (26.7-33.4)	29.9 (28.7-31.2)
Former smoker	7.9 (7.2-8.8)	9.1 (7.9-10.6)	10.5 (8.5-12.8)	8.6 (7.9-9.3)
Never smoker	62.3 (60.6-63.9)	60.7 (58.1-62.2)	59.6 (56.0-63.2)	61.5 (60.2-62.7)
Fruit and vegetable intake				
<5 per day	78.5 (77.0-79.9)	78.5 (76.1-80.7)	81.1 (77.9-83.9)	78.8 (77.7-79.9)
≥5 per day	21.5 (20.1-23.0)	21.5 (19.3-23.9)	18.9 (16.1-22.1)	21.2 (20.1-22.3)

CI indicates confidence interval.

^aWomen who stated that they were pregnant were excluded from these analyses.

^bNormal weight indicates a body mass index (BMI) <25.0 kg/m², overweight indicates a BMI between 25.0 and 29.9 kg/m², and obese indicates a BMI ≥30.0 kg/m². Respondents with a BMI <18.5 kg/m² were included in the normal weight category.

^cCurrent smokers had smoked at least 100 cigarettes in their lives and currently smoked on at least some days; former smokers had smoked at least 100 cigarettes in their lives but currently did not smoke; and never smokers had not smoked at least 100 cigarettes in their lives.

^dPhysical activity status based on Centers for Disease Control and Prevention's recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

^eOnly asked of respondents who indicated that they were trying to lose weight or maintain their current weight.

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Table 2. (continued) Prevalence of Health Indicators for Young Adults (Aged 18–24 y)^a, by Characteristic and Body Mass Index Category^b, Behavioral Risk Factor Surveillance System, 2003

Characteristic	Normal Weight Respondents, % (95% CI)	Overweight Respondents, % (95% CI)	Obese Respondents, % (95% CI)	Total, % (95% CI)
Physical activity status^d				
Met recommendations	58.4 (56.6-60.1)	61.3 (58.7-63.9)	52.8 (49.1-56.5)	58.4 (57.0-59.7)
Insufficient activity	32.2 (30.6-33.9)	31.6 (29.2-34.1)	37.9 (34.4-41.5)	32.8 (31.5-34.1)
Inactive	9.4 (8.3-10.6)	7.1 (5.9-8.5)	9.3 (7.5-11.7)	8.8 (8.0-9.6)
Current weight control activities				
Trying to lose weight	18.9 (17.6-20.3)	45.5 (42.9-48.2)	67.2 (63.6-70.5)	32.2 (31.0-33.5)
Trying to maintain weight	39.4 (37.8-41.1)	34.6 (32.0-37.3)	21.0 (18.2-24.1)	35.7 (34.5-37.1)
Neither	41.7 (39.9-43.4)	19.9 (17.8-22.1)	11.8 (9.6-14.4)	32.0 (30.8-33.4)
Professional advice on weight in past year				
Lose	0.9 (0.7-1.2)	6.7 (5.5-8.1)	24.3 (21.2-27.7)	5.5 (4.9-6.1)
Gain	2.9 (2.4-3.5)	0.3 (0.2-0.6)	0.4 (0.2-0.8)	1.9 (1.6-2.3)
Maintain	2.3 (1.7-3.0)	1.8 (1.3-2.4)	2.1 (1.3-3.2)	2.1 (1.7-2.6)
None	93.9 (93.0-94.7)	91.2 (89.8-92.5)	73.2 (69.8-76.4)	90.5 (89.7-91.2)
Dietary changes^e				
Fewer calories	34.9 (32.7-37.0)	43.1 (40.1-46.0)	50.8 (46.8-54.8)	40.1 (38.5-41.7)
Less fat	21.6 (19.8-23.6)	27.8 (25.1-30.7)	25.6 (22.0-29.6)	24.2 (22.8-25.7)
Neither	43.5 (41.4-45.7)	29.2 (26.5-32.0)	23.6 (20.5-27.0)	35.7 (34.2-37.3)
Increased physical activity^e				
Yes	81.2 (80.6-82.7)	84.2 (81.8-86.4)	81.3 (78.0-84.2)	82.1 (80.9-83.3)
No	18.8 (17.3-20.5)	15.8 (13.6-18.2)	18.7 (15.8-22.0)	17.9 (16.7-19.1)

CI indicates confidence interval.

^aWomen who stated that they were pregnant were excluded from these analyses.

^bNormal weight indicates a body mass index (BMI) <25.0 kg/m², overweight indicates a BMI between 25.0 and 29.9 kg/m², and obese indicates a BMI ≥30.0 kg/m². Respondents with a BMI <18.5 kg/m² were included in the normal weight category.

^cCurrent smokers had smoked at least 100 cigarettes in their lives and currently smoked on at least some days; former smokers had smoked at least 100 cigarettes in their lives but currently did not smoke; and never smokers had not smoked at least 100 cigarettes in their lives.

^dPhysical activity status based on Centers for Disease Control and Prevention's recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

^eOnly asked of respondents who indicated that they were trying to lose weight or maintain their current weight.

Table 3. Prevalence of Health Indicators for Overweight and Obese Young Adults (Aged 18–24 y)^a, by Characteristic and Sex, Behavioral Risk Factor Surveillance System, 2003

Characteristic	Overweight Respondents (BMI = 25.0-29.9 kg/m ²)		Obese Respondents (BMI ≥30.0 kg/m ²)	
	Male % (95% CI)	Female % (95% CI)	Male % (95% CI)	Female % (95% CI)
Mental health status				
No mental distress (0 days within past 30 days)	59.1 (55.5-62.6)	43.5 (39.7-47.4)	60.0 (54.6-65.2)	48.2 (43.5-52.9)
Few days of mental distress (1-13 days within past 30 days)	31.0 (27.8-34.4)	38.9 (35.3-42.7)	31.2 (26.4-36.5)	34.5 (30.2-39.1)
Frequent mental distress (≥14 days within past 30 days)	9.9 (7.8-12.5)	17.6 (14.7-20.9)	8.7 (6.2-12.1)	17.3 (14.2-20.8)
Physical activity status^b				
Met recommendations	66.8 (63.3-70.0)	51.5 (47.6-55.4)	59.7 (54.3-64.9)	44.1 (39.5-48.7)
Insufficient activity	27.0 (24.0-30.2)	39.9 (36.1-43.8)	33.2 (28.5-38.4)	43.7 (39.1-48.5)
Inactive	6.3 (4.7-8.3)	8.6 (6.9-10.6)	7.1 (4.6-10.6)	12.2 (9.6-15.4)
Current weight control activities				
Trying to lose weight	32.7 (29.5-36.1)	68.3 (64.4-71.9)	60.1 (54.7-65.3)	76.2 (71.9-80.0)
Trying to maintain weight	40.7 (37.2-44.3)	23.8 (20.4-27.6)	24.8 (20.6-29.6)	16.1 (12.9-19.9)
Neither	26.6 (23.6-29.9)	7.9 (6.4-9.9)	15.0 (11.6-19.2)	7.7 (5.6-10.6)
Professional advice on weight in past year				
Lose	3.7 (2.5-5.3)	12.1 (9.8-14.8)	16.7 (12.7-21.6)	34.2 (29.8-38.8)
Gain	0.3 (0.2-0.5)	0.4 (0.1-1.3)	0.3 (0.1-0.8)	0.6 (0.3-1.3)
Maintain	1.3 (0.8-2.0)	2.6 (1.8-3.9)	1.4 (0.7-2.9)	2.9 (1.7-4.9)
None	94.8 (93.1-96.1)	85.0 (82.1-87.4)	81.6 (76.7-85.7)	62.4 (57.7-66.9)

BMI indicates body mass index; CI, confidence interval.

^aWomen who stated that they were pregnant were excluded from these analyses.

^bPhysical activity status based on Centers for Disease Control and Prevention's recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

Table 4. Prevalence of Health Indicators for Overweight and Obese Young Adults (Aged 18–24 y)^a, by Characteristic and Race and Ethnicity, Behavioral Risk Factor Surveillance System, 2003

Characteristic	Non-Hispanic White Respondents % (95% CI)	Non-Hispanic Black Respondents % (95% CI)	Hispanic Respondents % (95% CI)	Respondents From Other Race or Ethnicity, Non-Hispanic, % (95% CI)
Overweight (BMI = 25.0-29.9 kg/m²)				
Smoking status^b				
Current smoker	36.2 (33.2-39.3)	22.1 (16.7-28.6)	18.6 (13.7-24.8)	27.0 (19.3-36.3)
Former smoker	10.5 (8.9-12.4)	2.3 (1.1-4.5)	10.3 (7.1-14.6)	7.0 (3.7-12.8)
Never smoker	53.3 (50.3-56.3)	75.6 (69.1-81.2)	71.2 (64.4-77.1)	66.1 (56.1-74.8)
Physical activity status^c				
Met recommendations	63.3 (60.3-66.1)	57.0 (50.0-63.8)	58.0 (50.4-65.3)	61.5 (50.0-71.9)
Insufficient activity	32.7 (29.9-35.6)	27.8 (22.1-34.3)	30.7 (24.4-37.8)	32.7 (22.7-44.4)
Inactive	4.1 (3.2-5.2)	15.2 (11.1-20.4)	11.3 (7.3-17.0)	5.8 (3.2-10.5)
Professional advice on weight in past year				
Lose	6.1 (4.7-7.9)	8.9 (5.7-13.7)	8.5 (5.7-12.5)	3.3 (1.8-5.9)
Gain	0.3 (0.2-0.6)	0.1 (0.01-0.5)	0.5 (0.1-2.6)	0.2 (0.02-1.2)
Maintain	1.4 (0.9-2.2)	2.4 (1.1-5.3)	2.1 (1.1-3.7)	2.4 (1.1-5.1)
None	92.2 (90.4-93.8)	88.6 (83.6-92.3)	88.9 (84.7-92.1)	94.1 (90.6-96.4)
Obese (BMI ≥30.0 kg/m²)				
Smoking status^b				
Current smoker	32.5 (28.7-36.5)	24.8 (17.8-33.4)	25.3 (16.8-36.4)	34.1 (21.4-49.5)
Former smoker	11.2 (8.9-14.0)	6.5 (3.0-13.7)	12.8 (7.5-21.2)	8.0 (3.4-17.9)
Never smoker	56.3 (52.0-60.5)	68.6 (59.8-76.3)	61.8 (50.7-71.8)	58.0 (43.1-71.6)
Physical activity status^c				
Met recommendations	53.4 (48.9-57.8)	49.7 (41.4-58.0)	52.2 (41.4-62.8)	55.4 (40.6-69.4)
Insufficient activity	40.3 (36.1-44.7)	34.4 (27.2-42.5)	34.2 (25.3-44.3)	38.9 (25.5-54.2)
Inactive	6.3 (4.7-8.5)	15.9 (9.8-24.7)	13.7 (8.8-20.6)	5.7 (2.4-12.9)
Professional advice on weight in past year				
Lose	19.1 (16.0-22.8)	30.6 (23.7-38.5)	28.0 (19.5-38.5)	35.3 (22.0-51.2)
Gain	0.3 (0.1-0.6)	0.4 (0.1-1.7)	0.3 (0.04-2.2)	1.6 (0.5-5.2)
Maintain	2.5 (1.4-4.5)	2.6 (1.2-5.6)	0.7 (0.2-2.7)	0.8 (0.2-3.2)
None	78.1 (74.2-81.4)	66.4 (58.5-73.5)	70.9 (60.4-79.6)	62.4 (46.8-75.8)

CI indicates confidence interval; BMI, body mass index.

^aWomen who stated that they were pregnant were excluded from these analyses.

^bCurrent smokers had smoked at least 100 cigarettes in their lives and currently smoked on at least some days; former smokers had smoked at least 100 cigarettes in their lives but currently did not smoke; and never smokers had not smoked at least 100 cigarettes in their lives.

^cPhysical activity status based on Centers for Disease Control and Prevention's recommendations of 30 minutes or more per day of moderate-intensity physical activity on 5 or more days per week or 20 minutes or more per day of vigorous-intensity physical activity on 3 or more days per week.

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