

Can We Have Fries With That, Please? Nutrition And Physical Activities Among College Students

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ABSTRACT

Obesity is a growing health and socioeconomic issue in the United States. College students are an important part of the alarming statistics involving weight gain. This study investigated how nutrition behaviors and physical activity modified students' perceptions of body weight and nutrition knowledge. Furthermore, the study assessed gender and ethnicity as modifiers of nutrition behaviors, self-perception of body weight, and exercising habits among college students.

Keywords: Nutrition; college students; obesity; gender; ethnicity

INTRODUCTION

The United States' population is heavier than ever and obesity has become a public health concern in the country (Polednak, 2006). Approximately 65% of Americans are overweight and among college students nearly 35% are reported to be overweight (American College Health Association, 2008). Besides a health concern, obesity has become an economic issue that costs the United States approximately \$52 billion dollars every year (Allison, Zannolli & Narayan, 1999). Several health issues besides obesity are related to inappropriate nutrition habits which can cause long term consequences to one's health (Deshpande, Basil & Basil, 2009). For instance, increased risk of coronary disease, high blood pressure, high cholesterol and diabetes can be caused by a diet rich in certain components, such as fat, sodium, and sugar, and other components (Lichtenstein et al., 2006, American Heart Association, 2006).

In the face of alarming numbers regarding obesity and related health conditions, public officials are taking action. An example of governmental response can be observed in recent menu labeling legislation in New York City; San Francisco; and King County, Washington. Legislation on menu labeling is pending in California, Connecticut, Illinois, Iowa, Kentucky, Michigan, New Jersey, New York, Pennsylvania, Tennessee, and Vermont (Restaurant, Food & Beverage Market Research Handbook, 2009). Public campaigns are calling on restaurants to address the issue in their stores and menus (Restaurant, Food & Beverage Market Research Handbook, 2009). Public actions to ban trans fats from restaurants and food products are already in place in Tiburon, California; New York; Philadelphia; and Seattle. In 2010, trans fats must be removed from restaurant products and by 2011, they must be removed from all retail baked goods in California, although packaged foods are exempt (Restaurant, Food & Beverage Market Research Handbook, 2009).

Walker, Wolf and Schroeter (2009) revealed that college students spend approximately \$58 each week on food purchases and nearly \$30 each week on food eaten away from home. Furthermore, students spent approximately 40% of the money spent on food eaten away from home in fast-food and sit-down restaurants, which indicates students seek convenience and low prices (Walker, Wolf & Schroeter, 2009).

COLLEGE STUDENTS AND WELL-BEING

College student nutritional habits provide an interesting research arena since college is often the transition from parental control to freedom of food choices (Desphande, Basil & Basil, D., 2009). Research indicates that people tend to make food choices based on recollections of nutrition practices that took place in their childhood (Branen & Fletcher, 1999). It is essential that caregivers, educators, and parents learn that what they feed their children will deeply affect their nutrition habits as adults.

The American College Health Association (2006) reported that only 7.3% of students eat required amounts of vegetables and fruits each day, and the majority of students exceed recommendations for saturated fat. Historically, college students have struggled with weight gain, particularly freshmen, are widely believed to gain an average of 15 pounds in their first year. Mihalopoulos, Auinger and Klein (2008) found freshmen, in fact, experience weight gain upon entering college, which scholars attributed mainly to wrong food choices, large portions, and decreased physical activities. Mihalopoulos, Auinger and Klein (2008) observed that if students maintained the rate of weight gain experienced in college, over the years they would become obese.

College students often lack knowledge to make the right food choices (Kolodinsky, et al 2008). Reading nutrition information on products' labels is essential to help people make the right selection. Although college students report reading food labels when purchasing items for the first time, research shows they are not looking at this information correctly (Kolodinsky et al., 2008). However, when students understand the nutrition information labels, purchasing behaviors are modified, revealing healthier choices, especially for females (Kolodinsky et al., 2008). Other findings revealed that reading food labels influences people's dietary habits, mainly regarding amounts of fat, but it does not increase the amount of fruits and vegetables people consume, which is also essential in a healthy diet (Kristal et al., 2001).

Certain types of food reduce the risk of diseases and assist in weight maintenance and weight loss. People who base their diets on vegetables revealed that these foods help their capability to control body weight (Williams, Grafenauer & O'Shea, 2008); moreover, Williams, Grafenauer & O'Shea (2008) found people who reported great consumption of cereals rich in fiber and whole grains achieved better weight loss results.

Skipping breakfast is another common dietary mistake (Harvard, Breakfast and your Health, 2005; Bowman, 2005) among college students. One study found people who did not skip meals, especially breakfast, were leaner than those who forewent meals in order to lose weight (Harvard, Breakfast and your Health, 2005). Bowman (2005) observed that people who have breakfast every day have a lower chance to be overweight than those who do not have breakfast. Even though research indicates having breakfast is essential to a healthy diet, it is important to include the right nutrients in the meal. Failing to do so can be harmful to one's health (Graves et al., 2008).

Scholars have warned about the dangers of late-night eating. This behavior is observed, particularly among obese and overweight individuals, and at times, it can be associated with an eating disorder (Blundell & Gillett, 2001; Colles, Dixon & O'Brien, 2007).

Besides a healthy diet, exercise is recommended to improve one's quality of life and overall health. The American College Heart Association (2008) observed that minimum exercise guidelines suggest moderate-intensity cardio or aerobic exercise for 30 minutes, five days per week, or vigorous-intensity cardio or aerobic exercise for 20 minutes, three days per week. Nonetheless, students, on average, do not comply with such recommendations (American College Heart Association, 2008; Yoh, 2009).

Physical activity frequency and eating habits vary among overweight and healthy weight students (Boyle & LaRose, 2008). Healthy weight students were found to exercise and eat healthy, whereas overweight students are significantly affected by their environment and external support to continue with their life style and habits (Boyle & LaRose, 2008). It was revealed that only 51% of participants classified as overweight or obese reported perceiving themselves as being overweight (Boyle & LaRose 2008).

INFLUENCE OF GENDER AND ETHNICITY IN FOOD CHOICES AND HEALTH BEHAVIORS

Despues and Freedman (2007) observed the importance of ethnicity and acculturation when developing health behaviors. African Americans were less likely to visit healthcare providers, eat fruits, and exercise; nonetheless, they were less likely to report overdrinking (Despues & Freedman, 2007). The study also found Asian American college students were less likely to report getting physical exams, exercising, visiting healthcare providers, and eating fruits and salads, when compared to European-American college students. Asian Americans were more likely to report eating French fries and smoking cigarettes than were European American college students (Despues & Freedman, 2007). It appears that the diets of many African American males are high in fat and low in fiber (Bronner & Harris, 1999).

Research on acculturation, as a modifier of health behaviors, refuted the popular belief that becoming acculturated to mainstream culture results in the adoption of healthier behaviors (Despues & Freedman, 2007). Findings revealed acculturation has both positive and negative effects on behaviors; highly acculturated Hispanic American and Asian American college students were more likely to submit themselves to physical exams, but were also more likely to drink alcohol (Despues & Freedman, 2007).

Other studies support the theory that ethnic groups develop different health behaviors that cause certain chronic diseases. The National Center for Health Statistics (2002) has found Hispanic Americans and African Americans are more likely than European Americans to develop inactive lifestyles and become obese (National Center for Health Statistics [NCHS], 2002).

Cultural differences observed among different ethnicities can also be predictors of nutrition habits. Research revealed that Caucasians consume more fruits and vegetables, ostensibly because such behavior is more encouraged in Caucasian families (Granner, Sargent & Calderon, 2004). Self-perception has been appointed as one of the major differences among cultural groups. Scholars who studied the extent to what ethnicity and culture influence nutrition habits showed that people of different ethnicities perceive body types in a different way (Biard, Morrison & Sleigh, 2007; Muennig, Jia, Lee & Lubetkin, 2008). Research has shown that different ways of defining body types influence people to develop different eating habits according to perceived ideal self-image. One of the differences observed by scholars refers to Caucasian women reporting healthier eating habits when compared to African American women (Biard, Morrison & Sleigh, 2007). This finding may be explained by the notion that Caucasian women believe men would be attracted to very thin women, which may lead Caucasian women to develop eating habits which keep them thin (Biard, Morrison & Sleigh, 2007). On the other hand, African American women reported feeling that African American men were attracted to women with a fuller figure (Biard, Morrison & Sleigh, 2007). On the other hand, Muennig, Jia, Lee and Lubetkin (2008) concluded that Caucasian women had a higher tendency to engage in unhealthy diets to lose weight.

Culture can be a predictor of exercise frequency, but studies have concluded that living in the United States may change habits. International students account for more than 4% of undergraduates and more than 10% of graduate students on American campuses. Yoh (2009) studied motivational attitudes toward exercising among international students and concluded foreign college students residing in the United States do not prioritize physical activities due to other challenges they face. In addition, Yoh revealed motivators for participating in physical activities, for both males and females, were maintaining good health and positive mental qualities.

Gender is another factor that influences nutrition behaviors, such as reading nutritional information on labels. Kolodinsky et al. (2008) found that when college males read nutrition labels on products, they look at the amount of protein the food contains, whereas females focus on the total amount of calories. Both genders failed to consider the amounts of sugar, fat, sodium, carbohydrates, and vitamins those items contained. Other studies supported gender differences in food choices and concern about nutrition (Levi, Chan & Pence, 2006; Bowman, 2005). Males' food choices and interest in nutrition are influenced by their perceptions of masculinity (Levi, Chan & Pence, 2006). Bowman's (2005) findings indicated the percentage of women who read nutrition labels is significantly higher than the percentage of men.

Males and females make choices based on how caloric the food may be. Blackman, Singer and Mertz (1983) concluded males consume more caloric foods than do females. Although there are behavioral similarities within a gender group, there are also disparities among its individuals depending on their body weight (Blackman, Singer & Mertz, 1983). Females differ from males regarding the importance they give to health issues as opposed to appearance concerns when eating (Hayes & Ross, 1987). Appearance is reported to be a stronger motivator to develop proper nutrition habits than is health, especially for females (Hayes & Ross, 1987).

Besides gender and ethnicity, there are other factors that have been found to constitute very strong predictors of influences on consumers' food choices, such as taste, nutrition, cost, convenience, and weight control (Glanz et al., 1998). Glanz et al. (1998) revealed taste is universally recognized as highly important while convenience was found to be positively correlated to fast-food intake and negatively correlated to fruit, vegetable, and breakfast cereal consumption.

WHY IS AMERICA GAINING WEIGHT?

Cutler, Glaeser, and Shapiro (2003) investigated weight gain. They suggested Americans increased their calorie intake enormously by adding items that had not previously belonged to the American diet. Furthermore, an increase in food variety, combined with a decrease in the price of mass produced goods, allows Americans to eat more (Cutler, Glaeser & Shapiro, 2003).

Young and Nestle (2002) observed how portion size, home cooking, and eating at restaurants influence people's nutrition habits. In the 1970s, only 34% of the average food budget was spent at restaurants, but it is estimated this number increased to 47% by the late 1990s. Larger portion sizes result in a higher calorie intake and encourage people to eat more (Young & Nestle, 2002). Young and Nestle (2002) revealed that marketplace portions are larger than federal recommendations, which contributes to weight gain. The proliferation of buffet style cafeterias and large meal portions are among the reasons for poor nutrition and unhealthy eating behaviors among college students (Levitsky, Halbmaier & Mrdjenovic, 2004).

FAST-FOOD IN THE UNITED STATES

The percentage of adults who eat fast-food has increased from the early 1990s and consumption is particularly high among college-aged adults (Bowman & Vinyard, 2004). Other research supports Bowman and Vinyard's (2004) findings; Glanz et al. (1998) stressed the importance of convenience and price for fast-food consumers.

Chandon and Wansink (2007) observed that claims by fast-food chains, regarding the healthiness of their food, have to be analyzed rather carefully. Research revealed that people underestimated the calories contained in main dishes at fast-food restaurants claiming to serve low-calorie and healthy foods. Customers of restaurants that made such claims often chose higher caloric side dishes, including carbonated drinks, cookies, and chips (Chandon & Wansink, 2007). Conversely, when people ate at restaurants not claiming to serve healthier foods, they sometimes chose less caloric side dishes and drinks. As a result, caloric intake was not dependent on whether one ate at a "healthy" or "unhealthy" restaurant. Caution is advised when making overrated claims of healthy food options. Consumers should know how many calories they are consuming, not only in the main dish, but also in the side dishes (Chandon & Wansink, 2007).

HYPOTHESES

Louisiana cuisine, especially Cajun cuisine is noted for not just taste, but for the many trappings of high caloric foods. In this region, food is an essential product of economic and cultural forces (Ten Eyck, 2001). Culture and food are often closely intertwined. As a result, a study of nutrition and exercise in Louisiana is especially appropriate.

Eight hypotheses were tested:

- Hypothesis 1:** Reported breakfast frequency will influence reported exercise frequency. consumption
- Hypothesis 2:** Participants who report high nutrition knowledge will report eating fast-food less frequently.
- Hypothesis 3:** Participants who report reading food labels will report weighing less.
- Hypothesis 4:** Females will report reading food labels more than will males.
- Hypothesis 5:** People who reported to be overweight will report exercising less.
- Hypothesis 6:** Ethnicity will influence reported body weight.
- Hypothesis 7:** Participants who report snacking late at night will have higher reported body weight.
- Hypothesis 8:** Participants who report snacking late at night will eat fast- food more frequently.

METHODOLOGY

Data were obtained from a convenience sample of 225 college students (38.4% males, 61.6% females) aged 18 years or older, enrolled in English and Communication courses. Additionally, international students were surveyed. The sample had students of all classifications. Among the participants who reported their ethnicity (n=221), 67.9% were white/Caucasian, 18.6% were African American, 7.2% were Asians, and 6.23% were Hispanic/Latinos. Of the participants who offered data about their nationality (n=223), 23.3% reported being non-U.S. natives (international students).

Students enrolled in English and Communication courses at freshmen, sophomore, and junior levels participated in the study. The courses used in the study are required in all majors, which diversified the sample. Furthermore, the Office of International and Multicultural Affairs sent an email requesting participation by international students. The survey instrument was an electronic questionnaire available to students through a program on the Web. The instrument was designed to identify behaviors and attitudes regarding nutrition and eating habits, as well as exercising routine. The questionnaire was pre-tested. The surveys were available online for a period of 18 days during the Fall 2009 semester.

FINDINGS AND DISCUSSION

Hypothesis 1: Reported breakfast frequency will influence reported exercise frequency. To test Hypothesis number 1, researchers conducted a correlation statistical test.

Correlations

		Exercise days	Breakfast
Exercise days	Pearson Correlation	1.000	-.213**
	Sig. (2-tailed)		.001
	N	223.000	223
Breakfast	Pearson Correlation	-.213**	1.000
	Sig. (2-tailed)	.001	
	N	223	224.000

** . Correlation is significant at the 0.01 level (2-tailed).

The relationship between the frequency of exercising and frequency of eating breakfast is statistically significant at the .01 level ($p < .01$); the relationship is inverse and moderate (Pearson $r = -.213$).

Research has shown people who eat breakfast are less likely to be overweight than those who do not (Bowman, 2005). A possible explanation for the unpredictable inverse relationship may be related to the types of breakfasts students consume. Students' breakfasts may be less than ideal nutritionally due to student lifestyles. As noted by Graves et al. (2008), schools in the United States, particularly in the South, do not serve an appropriate breakfast to children. As a consequence of poor childhood nutrition habits, college students may have carried these behaviors to their adulthood, as previous research has suggested (Branen & Fletcher, 1999).

Hypothesis 2: Participants who report high nutrition knowledge will report eating fast-food less frequently.

		Nutrition Knowledge	Eat Fast-Ffood
Nutrition knowledge	Pearson Correlation	1	-.296(*)
	Sig. (2-tailed)		.000
	N	223	221
Eat fast-food	Pearson Correlation	-.296(*)	1
	Sig. (2-tailed)	.000	
	N	221	222

* Correlation is significant at the 0.01 level (2-tailed)

The relationship between nutrition knowledge and eating fast-food is statistically significant at the .01 level ($p < .01$). The relationship is inverse and moderate. (Pearson $r = -.296$). As thought, nutrition knowledge leads to healthier eating, though the relationship is not as strong as expected. This may be due to the notion that college students often seek convenient and cheap choices of food, even when they are aware it is unhealthy (Bowman & Vinyard, 2004; Glanz et al., 1998).

Hypothesis 3: Participants who report reading food labels will report weighing less.

		Read Nutrition Information on Labels	Body image
Read nutrition information on labels	Pearson Correlation	1	-.171(*)
	Sig. (2-tailed)		.010
	N	224	224
Body image	Pearson Correlation	-.171(*)	1
	Sig. (2-tailed)	.010	
	N	224	224

* Correlation is significant at the 0.05 level (2-tailed)

The relationship between reading nutrition labels and weighing less is statistically significant at the .05 level ($p < .05$). The relationship is inverse and weak. (Pearson $r = -.171$). The literature reveals labels influence dietary habits and when college students understand the labels, their purchasing behaviors change, revealing healthier choices (Kolodinsky et al., 2008). Research indicates females (which were the largest group in this sample) tend to over-estimate their body size and weight (Gardner, Jappe & Gardner, 2009), perhaps leading to the weak correlation.

Hypothesis 4: Females will report reading food labels more than males. To test this hypothesis, researchers conducted an independent samples *t* test.

I read nutrition information on labels	Gender	N	Mean	Std. Deviation	Std. Error Mean
	Male	85	3.19	1.258	.136
	Female	138	2.84	1.319	.112

Females read nutrition information on labels ($m=3.19$, $sd= 1.258$) more than males do ($m=2.84$, $sd= 1.319$). The difference between the two means is not statistically significant at the .05 level ($p > .05$), but were at the .10 level. Based on previous findings, scholars predicted that females would report reading food labels more than

males. Research has observed gender differences in food choices and concern about nutrition (Levi, Chan & Pence, 2006; Bowman, 2005); results revealed that female students reported healthier food choices and nutrition awareness, supporting previous research that showed women pay attention to food labels more than men do (Levi, Chan & Pence, 2006), although in the present study, only slightly more.

Hypothesis 5: People who reported to be overweight will report exercising less.

Correlations

		Exercise days	Body Image
Exercise days	Pearson Correlation	1.000	-.157*
	Sig. (2-tailed)		.019
	N	223.000	223
Body image	Pearson Correlation	-.157*	1.000
	Sig. (2-tailed)	.019	
	N	223	224.000

*. Correlation is significant at the 0.05 level (2-tailed).

The relationship between reported weight and exercising frequency is statistically significant at the .05 level ($p < .05$); the relationship is inverse and weak. (Pearson $r = -.157$). It is common knowledge that regular exercise helps maintain body weight. However, Boyle and LaRose (2008) observed that physical activity and eating habits vary among overweight and healthy weight students. It was expected that students who reported higher body weights would exercise less. The correlation discerned is weak, which may be explained by erroneous reports regarding weight. Boyle and LaRose (2008) found that only 51% of participants classified as overweight or obese perceived themselves as being overweight, which raises serious concerns about students’ knowledge and self-perceptions about weight (Gardner, Jappe & Gardner, 2009).

Hypothesis number 6: Ethnicity will influence reported body weight.

Weight was reported on a scale in which higher scores indicated higher weights (1= very thin, 2= at ideal weight, 3= a few pounds over ideal weight, 4= considerably overweight). For White/Caucasians, the reported mean was 2.51 (sd= .693); the mean for African Americans was 2.37 (sd= .1.019); the mean for Asians was 2.31 (sd= .704); and the mean for Hispanics was 2.57 (sd= .852). The differences among the means is not statistically significant at the .05 level ($p > .05$). Hypothesis 6 was not supported.

Hypothesis 7: Those who report snacking late at night will have higher reported body weight.

The relationship between snacking late at night and reported body weight was statistically significant at the .05 level ($p < .05$); the relationship is inverse and weak (Pearson $r = -.138$). Late-night eating is observed particularly among obese and overweight individuals, and at times, can be associated with an eating disorder (Blundell & Gillett, 2001; Colles, Dixon & O'Brien, 2007).

		Body image	Snack at night
Body image	Pearson Correlation	1.000	-.138*
	Sig. (2-tailed)		.039
	N	224.000	223
Snack at night	Pearson Correlation	-.138*	1.000
	Sig. (2-tailed)	.039	
	N	223	223.000

*. Correlation is significant at the 0.05 level (2-tailed).

Hypothesis 8: Participants who report snacking late at night will eat fast- food more frequently.

		Snack at night	Eat fast-food
Snack at night	Pearson Correlation	1.000	.272**
	Sig. (2-tailed)		.000
	N	223.000	222
Eat fast-food	Pearson Correlation	.272**	1.000
	Sig. (2-tailed)	.000	
	N	222	222.000

** . Correlation is significant at the 0.01 level (2-tailed).

The relationship between snacking late at night and eating fast-food was also statistically significant at the .01 level ($p < .01$); the relationship is direct and moderate (Pearson $r = .272$). Participants who reported high body weight also reported high frequency of eating fast-food, indicating the habits that could be connected.

LIMITATIONS AND FUTURE RESEARCH

There are a few limitations that affected this study, such as the use of a convenience sample instead of a random sample. Researchers suggest that future studies use a random sample and include regionally-dispersed students. Moreover, assessments of students’ nutrition behaviors were through self-reporting, which may produce inaccuracies. Future research could evaluate the same variables assessed in this study with a different method of collecting data. An observational study may reduce sampling error caused by participants’ misreporting. Another limitation of this study is related to the instrument used. For instance, the type of breakfast consumed daily was not measured. Furthermore, researchers did not include questions about portion sizes. The instrument did not investigate smoking and alcohol habits, which may influence nutrition and exercise behaviors.

CONCLUSION

This study assessed nutrition and exercising habits among college students at a southern university. After surveying 225 participants enrolled in different courses at the university, researchers tested eight primary hypotheses. College students have much to learn relative to eating well and exercising frequently. Eating breakfast has many benefits, including the maintenance of weight. Ethnicity did not appear to influence findings and perhaps, such was due to demographic characteristics of the sample, the size of the sample, and the geographically singularity of the sample.

Reading food labels was also found to be an important indicator of nutrition behavior, as noted by Kristal et al. (2001) and Kolodinsky et al. (2008). Gender did not impact the propensity to read nutrition labels. However, results pointed to a statistically significant relationship between reading food labels and body weight.

The relationship between body weight and exercising was also significant. Students who reported higher body weight reported a lower frequency of exercising. Educational institutions could encourage overweight people to exercise; perhaps offering fitness classes directed to beginners. Furthermore, as convenient as parking shuttle systems are, they ostensibly lead to decreased walking by many.

The last nutrition habit analyzed in this study referred to snacking at night; the relationship found between snacking late at night and higher reported body weight was unexpected, for it did not support previous research. Scholars found that students who reported snacking at night reported weighing less, again leading to questions about perceptual biases of the respondents.

Although some relationships are unclear and still need some further investigation, this study provides valuable insight regarding nutrition and exercise behaviors of college students.

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