

# Exploration Of Healthy Eating Education And Consumption Of Various Foods Of College Students In A Small Liberal Arts College

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## ABSTRACT

*Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer (World Health Organization, 2011; National Institutes of Health, 1998). Children with high BMI often become obese adults (Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993). According to the World Health Organization (2011), obesity is preventable. While it is well known that obesity can be prevented, it often is not. This article examines how healthy eating education has an impact on food choices of college students in a liberal arts college in Northeastern Pennsylvania. The researchers will discuss the implications for educators, administrators, and researchers. Findings, conclusions, and recommendations will be presented.*

**Keywords:** Obesity; Overweight; Freshman 15; Food Choices and College Freshmen

## INTRODUCTION

According to Conner, Norman, and Bell (2002), “*healthy eating* is defined in relation to current dietary recommendations as being a diet low in fat, high in fiber, and high in fruit and vegetable consumption” (p. 194). Additionally, there is overwhelming evidence that being overweight and/or obese are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer (World Health Organization, 2011; National Institutes of Health, 1998). In 2007-2008, the prevalence of obesity was 32.2% among adult men and 35.5% among adult women (Flegal, Carroll, Ogden, & Curtin, 2010). In the United States high body mass index (BMI) among children and adolescents continues to be a public health concern. Children with high BMI often become obese adults (Serdula, Ivery, Coates, Freedman, Williamson, & Byers, 1993). According to the World Health Organization (2011), obesity is preventable. However, for chronic disease prevention and management, assessment tools are needed to determine risk, and monitor progress in a variety of settings (Paxton, Strycker, Toobert, Ammerman, & Glasgow 2011).

While research suggests unhealthy eating habits lead to being overweight, obesity, and health problems, people still engage in eating unhealthy food. In 2007, only 24% of U.S. adults ate five or more servings of fruits and vegetables per day (National Center for Health Statistics, 2008). When a healthy versus an unhealthy food temptation and a goal are presented together, the immediate value of the temptation relative to the goal increases (Fishbach & Zhang, 2008). A study conducted by Hollands, Prestwich, Marteau (2011), examined whether individuals' preferences for healthy versus unhealthy foods can be influenced through an evaluative conditioning procedure to determine whether changes in behavior were mediated by changes in implicit attitudes. They found that the evaluative conditioning procedure had significant effects on food-choice behavior.

A 2011 study based with university students in Saudi Arabia suggests that weight gain in the college population should be linked to increased incidence of cardiovascular disease and shows the global need for effective interventions in the young to address the obesity epidemic (Abdel-Megeid, Abdelkarem, & El-Fetouh, 2011). Greene, Schembre, White, Hoerr, Lohse, Shoff, Horacek, Riebe, Patterson, Phillips, Kattelman, and Blissmer (2011) found a difference in male and female risk factors based on eating competence and cognitive restraint scores for males and emotional eating and uncontrolled eating in women for this in high risk freshmen college group that they defined as higher weight status and increased waist circumference. In a 2008 a study by Holm-Denoma, Joiner, Vohs, and Heatherton (2008), suggest that college freshmen gain weight at a much greater rate than the general population and that this weight was often gained in the first three months of college life.

While the phrase “Freshmen 15” is a common reference to the weight gain of first year college students, Crombie, Ilich, Dutton, Panton, and Abood (2009), suggest that the freshman weight gain phenomenon was less than 15 pounds and closer to five pounds. Their study also suggested there should be research done to identify at risk groups and then try various intervention strategies.

O'Connor, Jones, Conner, McMillan, & Ferguson (2008), found strong evidence that daily hassles were associated with increased consumption of high sugar and high fat between-meal snack foods and also with a perceived reduction in vegetable and main meal consumption. When people are asked what dictates their food choices, taste is the overwhelming leader (Colby, Elder, & Peterson, 1987). Other factors such as price decrease of healthy food was found to produce the strongest increase in target item sales (Horgen, & Brownell, 2002).

Another influence on healthy eating is personality traits. A study by Hampson, Goldberg, Vogt, and Dubanoski (2007) found that children whom teachers regarded as more agreeable, conscientious, and intellectual-imaginative went on to do better educationally and also to have healthier eating habits, to smoke less, and to report better health status at midlife.

In 2009, a class-based nutrition intervention was successful in improving nutritional habits (Ha, Caine-Bish, Holloman, & Lowry-Gordon). Lawson and Price (2003) found that chunking information was more beneficial for large-scale change, and the use of role models altered behavior. In addition, there is also evidence that periodic prompts and reminders are helpful in changing unhealthy habits (Cole-Lewis & Kershaw, 2010).

## **PURPOSE**

The purpose of this study is to analyze how healthy eating education impacts food choices of college students in a liberal arts college in Northeastern Pennsylvania. This study will utilize the *Starting The Conversation (STC): Diet Instrument* (Paxton, Strycker, Toobert, Ammerman, & Glasgow, 2011) as a pre- and post-test to analyze the difference in eating habits education may play in food choices of college students in a liberal arts college.

## **WHAT IS OBESITY?**

Overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in meters). A person with a BMI of 30 or more is generally considered obese. “A person with a BMI equal to or more than 25 is considered overweight” (World Health Organization, 2011, para. 1). A study conducted by Kasperek, Corwin, Valois, Sargent, and Morris, (2008), which targeted physical activity and fruit and vegetable intake suggested that one of the criteria to measure obesity is a BMI over 25.

## **RESEARCH QUESTIONS AND VARIABLES**

- RQ 1:** Does healthy eating education change consumption of fruits and vegetables?
- RQ 2:** Does healthy eating education change consumption of sugar and regular soda?
- RQ 3:** Does healthy eating education change consumption of snack foods?

## PARTICIPANTS

Participants in this study were students enrolled in one of the nine sections of Health and Wellness classes (PHED 105) of a small, liberal arts college in Northeastern Pennsylvania. A total of three different instructors, one full-time and two adjuncts, taught the classes. All classes met two days a week, for 50 minutes each. The PHED 105 class, which “investigates concepts and current theories of wellness and fitness, evaluates the student's current level of fitness, and assists in designing a personal fitness prescription to improve student’s cardiovascular and/or muscular fitness level, is intended for students of all ages and abilities” (College Catalog, 2011, p. 241). For this particular study, the intended population was college freshmen. So as not to draw attention to this group, everyone in class was given the pre- and post-surveys. Afterwards, all non-freshmen surveys, and surveys of freshmen who completed only one of the surveys, were removed from the group, resulting in a sample size of forty-six (N = 46). This sample consisted of a 58.7% male and 41.3% female. The majority (93.5%) were nineteen years of age or younger, with only three participants falling in the range of 20-24 years old. The majority (69.6%) lived in on-campus residence halls.

## PROCEDURE

The Starting The Conversation (STC): Diet Instrument (Paxton, Strycker, Toobert, Ammerman, & Glasgow, 2011) was used as a pre- and post-survey to collect the data (See Figure 1). The pre-survey was administered to students prior to any type of in-class discussion of diet. Besides general information such as gender, age, and living arrangements, eight questions dealing with nutrition were asked. Responses were set to a Likert scale of one to three. In addition to the normal classroom activities, four different videos on healthy eating and nutrition were shown over a four-week period. The clips ranged from one to four minutes and included information on how to choose healthy snacks, how to choose good quality protein, steps to a healthy diet, and consequences of choosing a poor diet. Since these videos are not normally a part of the course, they served to increase the number of times messages concerning a healthy diet were included in the class. Near the end of the semester, the same survey was given to all classes, serving as a post-test. Questions were grouped into three categories (fruits, vegetables, snacks). Questions in the same categories were combined in order to analyze the three hypothesis questions. Pre-and post-survey answers were matched up, and statistics were run to analyze the results.

### Answer the following, based on the past few months:

1. How many times a week did you eat fast food meals or snacks?	<b>less than 1 time</b> <input type="checkbox"/>	<b>1 -- 3 times</b> <input type="checkbox"/>	<b>4 or more times</b> <input type="checkbox"/>
2. How many servings of fruit did you eat each day?	<b>5 or more</b> <input type="checkbox"/>	<b>3 – 4</b> <input type="checkbox"/>	<b>2 or less</b> <input type="checkbox"/>
3. How many servings of vegetables did you eat each day?	<b>5 or more</b> <input type="checkbox"/>	<b>3 – 4</b> <input type="checkbox"/>	<b>2 or less</b> <input type="checkbox"/>
4. How many regular sodas or glasses of sweet tea did you drink each day?	<b>less than 1</b> <input type="checkbox"/>	<b>1 – 2</b> <input type="checkbox"/>	<b>3 or more</b> <input type="checkbox"/>
5. How many times a week did you eat beans (like pinto or black beans), chicken, or fish?	<b>3 or more times</b> <input type="checkbox"/>	<b>1 – 2 times</b> <input type="checkbox"/>	<b>less than 1 time</b> <input type="checkbox"/>
6. How many times a week did you eat regular snack chips or crackers (not low-fat)?	<b>1 time or less</b> <input type="checkbox"/>	<b>2 – 3 times</b> <input type="checkbox"/>	<b>4 or more times</b> <input type="checkbox"/>
7. How many times a week did you eat desserts and other sweets (not the low-fat kind)?	<b>1 time or less</b> <input type="checkbox"/>	<b>2 – 3 times</b> <input type="checkbox"/>	<b>4 or more times</b> <input type="checkbox"/>
8. How much margarine, butter, or meat fat do you use to season vegetables or put on potatoes, bread, or corn?	<b>very little</b> <input type="checkbox"/>	<b>some</b> <input type="checkbox"/>	<b>a lot</b> <input type="checkbox"/>

**Figure 1. Starting the Conversation (STC): Diet Instrument (Paxton, Strycker, Toobert, Ammerman, & Glasgow, 2011)**

## FINDINGS

Wilcoxon signed ranks tests were used to compare the results of the pre-survey with the results of the post-survey for the forty-six Freshmen who completed both (See Table 1).

For RQ1 (Does healthy eating education change consumption of fruits and vegetables?), there was no significant difference in the responses given at the beginning of the semester to those given at the end of the semester,  $N = 46$ ,  $z = .317$ ,  $p > .01$ ,  $r = -.18$ , indicating a small to medium effect size according to Cohen (1988).

For RQ 2 (Does healthy eating education change consumption of sugar and regular soda?) no significant difference was found between the responses of the first survey and the second survey,  $N = 46$ ,  $z = -.191$ ,  $p > .01$ ,  $r = -.03$ , indicating a smaller than typical effect size according to Cohen (1988).

Similarly, no significant difference was found for RQ 3 (Does healthy eating education change consumption of snack foods?),  $N = 46$ ,  $z = -1.322$ ,  $p > .01$ ,  $r = -.20$ . A small to medium effect size according to Cohen (1988).

**Table 1**  
**Results of Wilcoxin Signed Tests**

	Research Q1	Research Q2	Research Q3
Z	-1.001	-.191	-1.332
Asymp.Sig. (2-tailed)	.317	.849	.183

## IMPLICATIONS

No significant change was found in the consumption of fruits, vegetables, snacks after healthy eating education in college freshmen. The results of the study have implications for students, parents, health education instructors, coaches, healthcare providers, and student life leaders. College health and wellness instructors and coaches should take these results into account when developing and delivering education classes and seminars. Those responsible for designing college menus should consider these findings when selecting food items to offer.

College students must be aware that there are consequences for their food selection and that 25% of college freshmen gain weight in that first year (Wengreen & Moncur, 2009). While students have knowledge of healthy versus unhealthy food options they still make unhealthy choices; these choices may have implications for future health problems. This study indicated that students do not make food choices based on knowledge of healthy eating.

## LIMITATIONS

Research conducted with freshmen students as the primary sample is a limitation of this study. It is important to study a diverse population; the sample of this study was limited to students attending a private liberal arts college in Northeast Pennsylvania. The sample of this study should be expanded to include the entire student population from this college and other colleges and universities throughout the United States. In addition, the sample could be expanded to include recent graduates in order to create a more diverse study sample. A further enhancement to this study would include a global population of students to gain student perspectives on healthy eating from around the globe.

## RECOMMENDATIONS

Students, parents, health education instructors, coaches, healthcare providers, and student life leaders must be cognizant of the potential consequences of students eating habits. According to the World Health Organization (2011), worldwide obesity has more than doubled since 1980. While this study indicates healthy eating education does not lead to healthy food choices in freshmen college students, more research needs to be conducted to determine some of the other contributing reasons for food choices.

Finally, future research would benefit from expansion of this study. Any expansion beyond the current population utilized will provide a greater opportunity to expand the research. In particular, the study can be expanded to include students from other educational institutions and students from other countries. This study contributes to the growing research regarding eating habits of college students. There are numerous opportunities for researchers to continue to build upon this study to determine why college students continue to knowingly make unhealthy food selections.

#### AUTHOR INFORMATION

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