



Research Article

Effect of the Pandemic on College Student Eating Habits

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Abstract

A survey of 359 College students was conducted to determine effects of the pandemic on eating habits. An online survey through Qualtrics™ was used to administer the survey. Participants stated that they ate more home-cooked meals, ate more snack foods and felt less comfortable eating at buffets/salad bars due to the pandemic. Overall, respondents did not eat more fruit/vegetables, eat less meat, or feel less comfortable eating at a restaurant. However, there was a significant correlation due to gender in responses to eating more fruit/vegetables, eating more take-out food and feeling comfortable eating at a restaurant. Overall, gender had a significant effect on how college-age students changed their eating habits due to the pandemic.

Keywords: COVID-19; College Students; Eating Habits

Introduction

The COVID pandemic has affected every aspect of people's lives including eating habits. Several studies have examined the impact of COVID pandemic and associated restrictions on people with eating disorders (ED) [1-3]. Factors increasing the risk of exacerbating ED during the pandemic include changes in normal routines, accessibility to food, and anxiety related to the disease. A meta-analysis of 53 studies reported that individuals with eating disorders displayed worsening symptoms, greater isolation, and increased hospitalizations during the COVID-19 pandemic [4]. The types of eating disorders included anorexia nervosa, binge-eating disorder, bulimia nervosa, and other eating disorders. A survey of 48% of 3533 respondents in Italy reported weight gain during April 2020 with 38% participating in more physical activity [5]. In a separate study in Brazil, families had a lower consumption of healthy food, especially those among the lower class in metropolitan areas [6].

Although excessive weight gain by college students in the freshman year "Freshman 5-15" has for the most part been debunked [7-11], stress and access to food can impact diet choices. In 2006 a study at the State University of New Jersey focused on college freshman and the challenges that they are faced with stress, changes and how that affect their eating habits [12]. The purpose of this study was to record the changes in body weight and body fat percentages among freshman college students. The authors used a digital scale with bioelectrical impedance, to measure height, weight, and body fat percentage for a sample of 217 students who volunteered. These same students were invited to complete a second measurement in February of the academic year. Only 67 of the 217 students undergo a second set of measurements in the spring. The mean change in body weight was an increase of 2.86 pounds, and the mean change in body fat percentage was an increase of approximately 0.7%. For the students who gained weight, the mean change in body weight was an increase of 6.82 pounds and their body fat percentage increased by $0.9 \pm 3.8\%$.

A cross-sectional study investigated the relationship between food insecurity, obesity, and dietary intake among college students [13]. The study included 683 second-year students across 8 universities in the United States. Assessments of food insecurity and dietary intake were taken using the USDA Adult Food Security Survey and the Dietary Screener Questionnaire, while anthropometrics were measured at specific universities. The results showed that students living off-campus had a higher chance of being food insecure than those living on-campus, and those enrolled in a meal plan were more likely to be food secure than those not enrolled. Employed students had higher odds of food insecurity than unemployed students. Results revealed that about 25% of students participating in the study were food insecure and the prevalence of overweight and obesity among the sample was about 30% and 10%, respectively. This study concluded that food insecurity was associated with obesity and poor dietary intake among students participating in the study. In a separate study, Choi [14] reported that college students with a perceived high stress level displayed greater unhealthy eating habits compared to students with lower perceived stress levels. Thirty-five Cornell University students participated in a study to analyze the factors that college students face that influence their eating habits [15]. The results of the study showed that common barriers to healthy eating were time constraints, unhealthy snacking, convenience high-calorie food, stress, high prices of healthy food, and easy access to junk food. In conclusion, healthy eating behavior among college students are influenced by personal (individual), social and environmental (university) factors. Another study on how gender affects eating habits of college students reported that overall females generally eat “healthier” [16]. Males did however eat more fruits and vegetables in college than females (when measured in absolute quantity). Some slight differences in overall eating habits are that males tend to eat less breakfast, more fast food, and pay less attention to food labels.

Deshpande, et al. [17] reported that college students living on-campus had differences than students living off-campus in terms of the amounts of protein they consumed for energy. They also found that the main factors that influenced their choices were gender, dietary status, importance of a healthy diet, food features, and cues to action on the intention to eat healthy while price, taste, ease of preparation, and convenience on barriers, efficacy did not have an influence on their choices. The objective of the current study was to determine how eating habits and food purchase patterns of university students have changed due to the pandemic.

Methods

A 12-question online survey was randomly administered to 358 college student volunteers specifically responding to the 7-point linear rating scale shown below to each statement that follows as to present behavior in comparison to behavior before the pandemic (Figure 1).

1. I eat more take-out food.
2. I eat more home-cooked foods.
3. I use more food delivery or pick-up.
4. I eat more fruit.
5. I eat more vegetables.
6. I eat less meat.
7. I eat less dairy products.
8. I eat more snacks.
9. I eat more fast food.
10. I feel comfortable eating at a restaurant.
11. I feel comfortable eating at a salad bar.
12. I feel comfortable eating at a buffet.

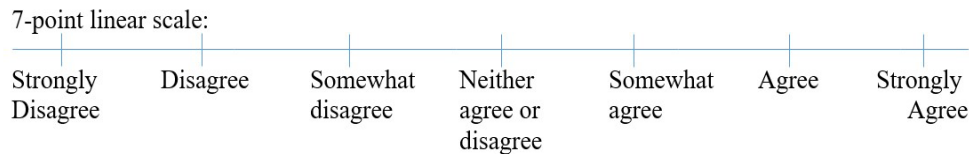


Figure 1: 12 question survey offered to 358 college student volunteers.

The survey was administered using Qualtrics™ online software. An email with the description of the study and a link to the online survey on Qualtrics™ was sent to a random sample of approximately 2,000 eligible undergraduates and graduate students, age 18 and older, who were enrolled in at least one course during the fall semester of 2020 and in the spring semester of 2021. This email emphasized that students' participation in the study was voluntary and confidential, and those who would wish to participate could access the link in the email to complete the survey. The survey was approved by an Institutional Review Board (IRB2020-295) before being disseminated. Participants had access to the survey for two months to facilitate a larger survey response. Responses to the survey were automatically recorded via Qualtrics™ survey software. Data were then exported via an Excel file and imported to SAS® OnDemand for Academics for analysis.

The surveys were completed between January, 2020 and January, 2021. A total of 358 responses were collected with a voluntary response rate of 18%. The survey had a completion rate of 95%, and the median time to complete the survey was five minutes. Responses were collected and analyzed using descriptive methods. Statistical significance was determined at a 5% level.

Results

Of the 358 respondents, 79.7% (282) were females and 20.3% (72) were male and 4 preferred not to respond as to their gender. The respondents came from a College of Agricultural and Life Science population that was 56.6% (1,193) female and 43.4% (915) male.

General trends were seen with statements I eat more home-cooked meals and I eat more take-out and I eat more snack foods with 62, 50 and 70% having some degree of agreement with those statements, respectively. These same statements had some level of disagreement with 25, 36 and 20% of the respondents (Figure 2). Only 14% of the respondents agreed to some degree with the statement they used more home food delivery. Overall responses did not differ based on gender for eating more home meals and eating more take-out foods ($p > 0.05$). Males reported using significantly more home food delivery and eating more snack food than females after the start of the pandemic ($p \leq 0.05$).

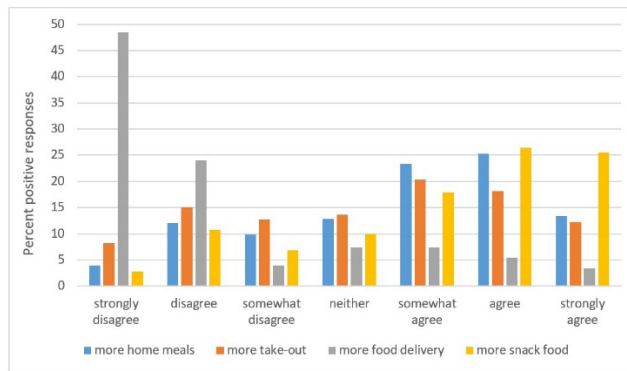


Figure 2: Percentage of positive responses to a seven point scale by College students to changes in eating habits (eating more home meals, eating more take-out food, using more food delivery and eating more snack food) after the COVID pandemic than before the COVID pandemic.

Seventy-one and 68% of college students reporting they did not decrease their intake of dairy and meat, respectively while 45% reported increasing and 25% decreasing their consumption of vegetables (Figure 3). Overall students had little change in the consumption of fruit in response to the pandemic. Female students reduced meat consumption and increased consumption of vegetables compared to males after the start of the pandemic ($p \leq 0.05$). There was not a difference in the change in consumption of fruits and dairy between females and males due to the pandemic ($p > 0.05$).

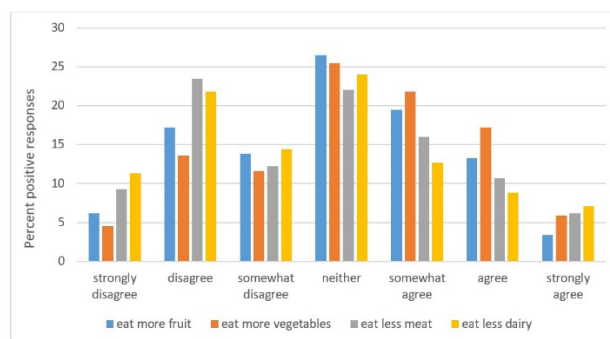


Figure 3: Percentage of positive responses to a seven point scale by College students to changes in eating habits (eating more fruit, eating more vegetables, using less meat and eating less dairy products) after the COVID pandemic than before the COVID pandemic.

Of all respondents, 21% agreed they were more comfortable eating at a buffet only 23% agreeing they were more comfortable eating at a salad bar after the start of the pandemic (Figure 4). The survey indicated the pandemic had little effect on college students' comfort in eating "fast food" or eating at a restaurant. Gender did not show a significant effect on response to eating at a restaurant of eating fast food ($p \leq 0.05$). However, after the pandemic started, males were more likely than females to feel more comfortable eating at a salad bar or buffet ($p \leq 0.05$).

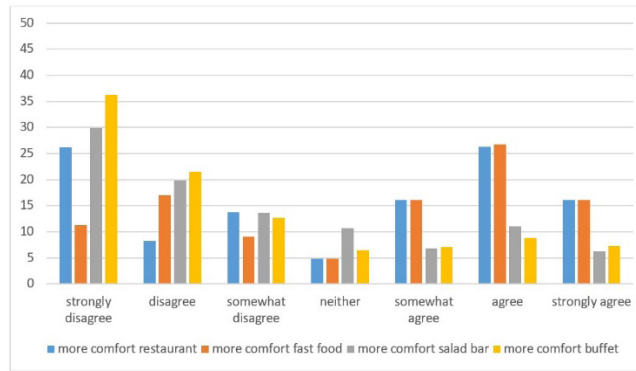


Figure 4: Percentage of positive responses to a seven point scale by College students to changes in eating habits (more comfortable eating at a restaurant, more comfortable eating food, more comfortable eating at a buffet) after the COVID pandemic than before the COVID pandemic.

Students eating more take-out food also reported eating less fruit and less vegetables while those eating more home-cooked foods ate more fruit and more vegetables in response to the pandemic (Table 1). Also, as expected eating more fruit was also significantly correlated to eating more vegetables.

Variables	Spearman's Correlation (p value)	
	I eat more fruit	I eat more vegetables
I eat more take-out food	-0.30799 (<0.0001)	-0.31342 (<0.0001)
I eat more vegetables	0.59817 (<0.0001)	
I eat more home-cooked meals	0.39206 (<0.0001)	0.38374 (<0.001)

Table 1: Spearman's correlation coefficients of variables having a significant relationship ($p \leq 0.05$).

Supporting our correlation, a University of Southern California study found that there is a positive correlation between eating more fruits and vegetables, and cooking more frequently, having a more positive attitude about cooking, and higher cooking confidence [18]. The students were largely female and living off campus with access to a kitchen. The average age of the students in the study was 18.9. The All Day Fruit and Vegetable Screener developed by the National Cancer Institute was used as the baseline test to determine how much fruit or vegetables participants consumed. In a separate study of college students, Adams, et al. [19] reported significant associations between COVID-19-related disruptions and increased alcohol intake but little change was found in overall fluid intake.

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