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“Comparison of International Student’s Dietary Intake in the United States
Versus in the Student’s Home Country”

December 11, 2017

Gail Lange-Smith and Sydney Van Scyoc

Abstract

International students studying at universities in the United States are subject to experiencing dietary acculturation while adapting to American food and culture. Such changes in eating patterns and behaviors are difficult to prevent and can negatively affect weight and health status. In this study, international students at a small, private college in Southwest Arkansas completed a questionnaire to assess the difference between their intake at home and intake in America. The students were found to have made undesirable changes in their eating patterns, and perceived an American style diet to be unhealthy. Students indicated that since living in America, they had experienced dietary changes: increased consumption of desserts, soft drinks, and meats, decreased consumption of vegetables, eating larger portion sizes, and dining more frequently at restaurants. The international students were aware of the connection between diet and health, and therefore expressed concern about the effects of dietary changes on their weight and overall health.

Introduction

The American diet is characterized by being low in fruits, vegetables, and whole grains, and high in added sugar, fat, and processed, pre-packaged items. American college students in particular are at risk for developing undesirable dietary patterns. International students who come to the United States for university are subject to dietary acculturation, and may adapt to an Americanized food intake. These changes, if made, can have a negative influence on the student's weight and health status. The authors of this study wanted to assess the differences in the diet of international students while at home versus while in America.

Literature Review

An increasing number of international students are choosing American universities for their study abroad experience¹. Up to 17% (n=764,495) of students studying outside of their home country are enrolled at American colleges^{1, 2}. These students are confronted with many cultural differences when leaving their home countries, and some students adapt more readily than others. One major aspect of cultural differences faced by international students is a change of dietary patterns and habits. The term “acculturation” refers to how a foreign individual changes their dietary practices as a natural reaction to being immersed in a new culture. When living among individuals of similar origin, foreigners are more likely to preserve the healthier aspects of their home diet than when living among a majority of the local population³. Length of stay is positively correlated with degree of dietary acculturation, the longer one lives in a new country, the more likely they are to adopt local eating patterns⁴. An ideal process of acculturation might involve adopting positive aspects from the new culture’s diet while maintaining the most favorable aspects of the traditional culture’s diet⁵. However, in the US, dietary acculturation often involves increased intake of foods high in empty calories and low in nutrient dense foods, which is consistent with a American style of eating³.

Though the United States Departments of Agriculture and Health and Human Services has developed Dietary Guidelines for Americans, research has shown that the population’s diet does not meet standards for healthy eating habits⁶. The American diet is characterized by its excess of processed and pre-packaged foods. In addition to this, convenience and fast foods are widely available, and use of artificial sweeteners and preservatives is common¹. While many of these food products taste good and are enjoyed by many Americans, they are not nutrient dense and are linked to weight gain and increased risks for chronic disease. Further characteristics of

the American diet involve undesirable behaviors such as eating out more often, snacking, and low consumption of fresh produce and whole grains^{1, 6, 7}. American college students in particular are more likely to adhere to poor eating habits which have a negative effect on their health over time.

Obesity rates of college students have risen from 12% to 36% from 1991-2004⁸. The cause of this increase in obesity prevalence can be partially credited to poor dietary quality. College students usually consume fewer fruits, vegetables, and dairy, and foods high in fat, sugar, and sodium foods. Many students also regularly skip breakfast and eat fast food^{7, 8, 9}. These unhealthful behaviors can develop because a student is limited to an on-campus meal plan, is responsible for grocery shopping and cooking for the first time, or simply as a result of a student's busy schedule⁹. Such habits can have a negative impact on the health of college students⁴. Lifestyle factors, including poor diet, are directly linked to overweight and obesity. Just as American students are at high risk for unhealthy diet quality and development of chronic diseases, international students coming to the US to study may experience similar consequences.

One study reported that 62% of Thai international students gained 5-15lb since immigrating to the United States (U.S.), and 43% of them thought their diets in the U.S. were less healthy³. Another study found similar results, as 71% of participants reported gaining weight while at university in the U.S, and 89% had increased blood glucose levels². These changes resulted from dietary acculturation to the American way of eating and cooking. Intake changes that were commonly found in a variety of studies with international students included eating larger portions, eating fast food and convenience foods, and skipping breakfast^{3, 4, 5, 7, 10}. Snacking and skipping meals became more common practices, and most American snacks consumed were high in salt and added sugar^{3, 7, 10, 11}. Many students have reported higher

consumption of fruits, and vegetables, but lower dairy and whole grains as while in America compared to typical diets in their home country^{3, 7, 10, 11}. Students are at particular risk for dietary acculturation because younger people tend to adapt faster to a new food culture. Many foreign students are unable to access or cook traditional food while studying in the U.S. Factors affecting this include the price of specialty foods, the student's preferences, and campus environment. Some students report that obtaining traditional foods is difficult due to availability, proximity, and lack of transportation¹. Immigrants may find ways to integrate traditional foods into their new diet, exclude them completely, or consume different foods altogether⁵.

The dietary acculturation experienced by international students studying in America may result in negative health outcomes. Two student researchers chose to conduct a study that would examine the eating patterns of the university's international students and measure their perception of the American diet. The objective of this study was to compare the dietary intake of international students living in America as opposed to their intake while living in their home countries.

METHODS

Participants

Participants included international students of all classifications attending Ouachita Baptist University. A range of ages were represented, 18-24 years old. Thirty-one questionnaires were distributed, to 14 male and 17 female responders. Sixteen countries were represented by participants: Zimbabwe (n=8), China (n=5), Japan (n=3), Brazil (n=2), Netherlands (n=2), and one each from Germany, Cambodia, Colombia, Belgium, Ukraine, Honduras, Latvia, South

Korea, Australia, South Africa, Tanzania (Appendix A). Fourteen participants had lived in the U.S. for one year or less, nine for two years, and eight for three or more years.

Research Design

Two senior level nutrition and dietetics majors at Ouachita Baptist University decided to explore the difference in dietary patterns of international students in context of their typical home diets versus eating patterns adopted while attending an American university. Firstly, a questionnaire was developed for distribution among international students (Appendix B). A qualitative style questionnaire would be beneficial as a follow up study to extrapolate further details about the changes in diet experienced by students new to the U.S. However, a quantitative questionnaire was determined most fitting for this study so that results could be analyzed and compared more efficiently. Secondly, the student researchers completed an application for permission to conduct this study which was approved by the university's Institutional Review Board. Prior to initial data collection, the questionnaire was pilot tested by students in the Introduction to Nutrition and Dietetics course. These students offered responses on the clarity of questions, organization of format, and options of answers in the questionnaire. Revisions were then made and the questionnaire was edited for coherence and length in accordance to the proposed suggestions. Thirdly, one researcher distributed the questionnaires to 31 individuals who were gathered for a previously planned event meant for international students which was unrelated to this study. The students responded and signed an informed consent form detailing the purpose and confidentiality of this study. Finally, responses to each question were collated in a Google sheets document shared by the researchers, who used the spreadsheet to organize and compare answers.

Results

Thirty-one international students were surveyed about their eating pattern at home versus in America. The first half of the questionnaire focussed on the subject's dietary intake (Appendix D). The first question on intake asked the participants how often they snack in the morning/afternoon. The responses were as follows: 26% said "7 days a week", 26% said "5 days a week", 32% said "2 days a week", and 16% said "almost never." The following question examined where the participants bought these snacks from, 45% said "grocery store/Walmart", 39% said "on campus source", 10% said "vending machines", 6% said "I do not snack often."

A comparison was then made between the frequency of eating at restaurants at home versus in America, 58% of the participants stated they ate at a restaurant once a week when in America but only 29% ate at a restaurant once a week at home. None of the participants reported "almost never" eating at restaurants in America, however, 19% said they eat out "almost never" at home.

When the participants were asked if they drink soft drinks more often at home or in America, 6% responded "at home", 68% responded "in America" and 26% responded "about the same."

The participants were then questioned on the frequency of vegetable consumption at home in comparison to in America and majority of the participants said they eat more vegetables "at home" (68%), whereas the minority reported that they eat more vegetables in America (19%), and "about the same" (13%).

The following vegetable consumption, the participants were asked where they eat meat more often. "In America" was the most popular choice (48%), followed by "about the same" (29%), and the least, (23%) responded "at home."

The next question examined where the participants eat more dessert. Again the majority of the participants (65%) answered “in America,” fewer (29%) responded “about the same” and the least amount (6%) said “at home.”

In contrast, when the participants were asked where they consume more grains, most of the participants (52%) felt they ate more grains “at home”, 26% believed they ate more “in America” and only 6% felt they ate “about the same” amount in both places.

The participants were asked where they eat more dairy products. While the majority of the participants (48%) ate “about the same” amount in both countries, 23% reported that they ate more dairy “at home”, and a similar amount (29%) reported that they ate more “in America.”

The last intake comparison question asked where the participants eat larger portions. None of the participants said they eat larger portions “at home” but 84% said they eat larger portions “in America” and only 16% responded “about the same.”

Finally, the participants were asked if they try to eat healthy meals, 81% said yes and 19% said no.

The second set of questions focused on an international student’s perceptions of the typical American diet (Appendix E). When asked to what extent the American diet had influenced their eating patterns, the majority responded either “very much” (45%) or “somewhat” (52%) and 3% said “not at all.” Direct comparison of perceived health of dietary patterns revealed that while 94% of students felt they followed a healthy eating pattern in their home country, only 32% felt that their eating pattern in the US was healthy.

International students are aware of the impact nutrition has on overall health. All students (n=31) indicated that they believe food plays an important role in determining health. A majority, 90%, expressed concern about the effect of diet on health and 94% were concerned about the

effect of diet on body weight. All but one of the students (94%) consider the American diet to be unhealthy. The final six questions of the questionnaire focused on demographic information, and the responses are detailed in under “participants” in the methods section.

Discussion

International students are subject to experiencing changes to their eating patterns and behaviors when they move to the United States to attend university. Many factors are at play when it comes to the dietary acculturation that these students experience. International students have limited options for accessing meals and snacks. On campus cafeterias, student centers, and vending machines are the most available options for international students, many of whom do not have reliable transportation methods. Such food sources provide American style meals and products, while offering limited fresh, healthy choices. These challenges faced by international students are difficult to overcome, and result in dietary acculturation.

Conclusion

International students studying in the United States, including those at Ouachita Baptist University, are susceptible to dietary acculturation. This is evidenced by increased consumption of desserts, soft drinks, and meats, decreased consumption of vegetables, eating larger portion sizes and dining more frequently at restaurants. Such eating habits are considered undesirable, and reflect an American dietary pattern. These changes in eating behaviors are consistent with a typical American college student’s diet, and may put international students at higher risk for weight gain and chronic disease as a result.

International students perceive the American diet and their eating pattern in the U.S. as being less healthy than their normal diet. They recognize the influence of food on one’s well-being and are concerned about the impacts that diet has on their overall health and weight.

Limitations

There were limitations to this study. The first limitation was that the sampling was not randomized, and the sample size was small. Secondly, the sample was taken from a private, Christian university in rural Arkansas, and is not representative of typical international students. Due to these limitations in sampling, the results of this study should not be used to make conclusive statements about the dietary acculturation of international students. Thirdly, little research was available on this topic at the time that this study was conducted, and some of the articles referenced here may be considered out of date.

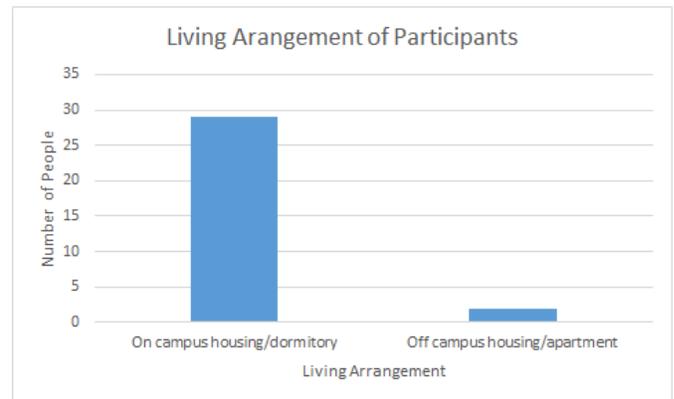
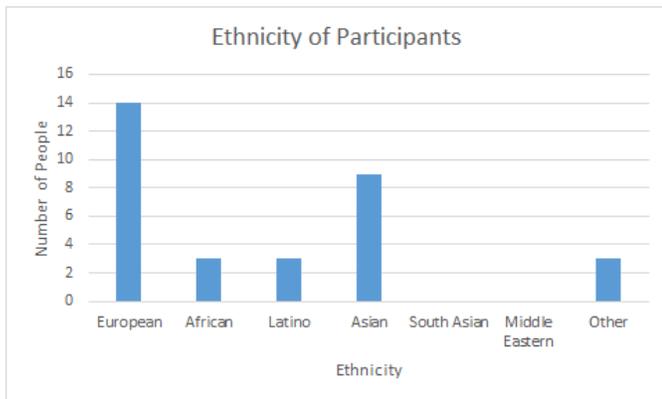
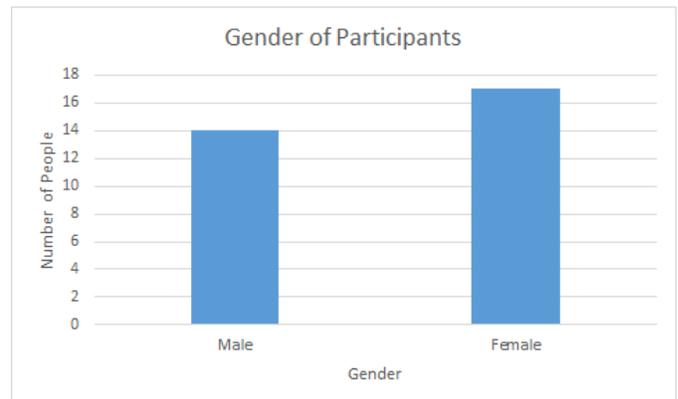
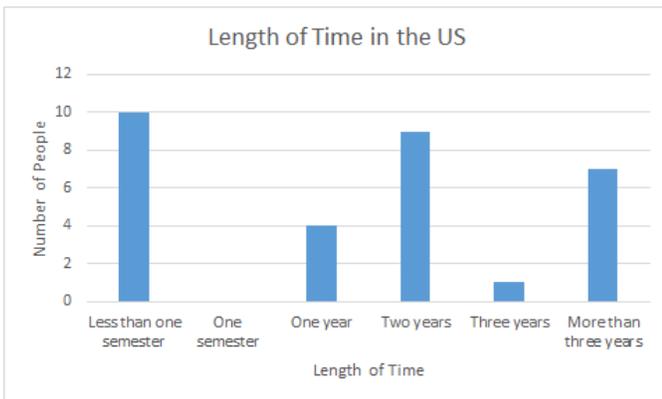
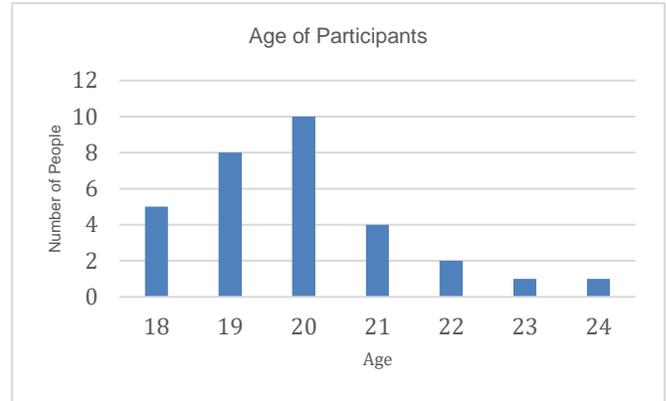
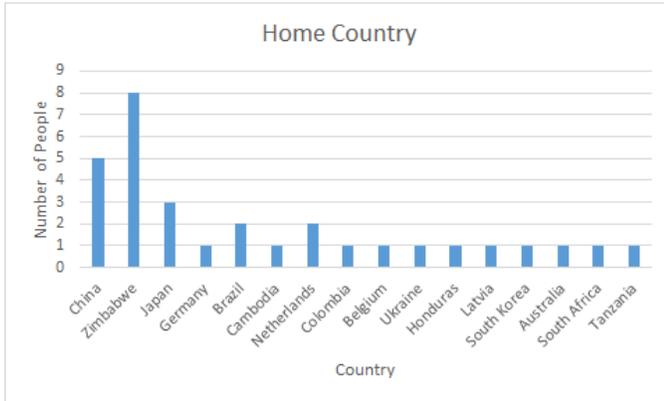
Implications for Further Research

Following this study, a structured interview with international students to identify the specific ways in which their dietary patterns have changed since moving to the U.S. would be beneficial. Additionally, collection of anthropometric data (height, weight, and waist circumference), and lab values (blood pressure, serum glucose, and triglycerides) would be helpful to see the clinical impact and risk for disease that dietary acculturation may have had.

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Appendix A



Appendix B

Survey for Research Study

Questionnaire addressing dietary habits of international students

Participant number_____

Please indicate the answer which best describes your normal eating pattern or general thoughts on American diets versus diets in your country.

Intake

1. How often do you have a snack in the morning/ in the afternoon?
 - a) 7 days a week b) 5 days a week c) 2 days (Only on weekends) d) Never
2. Where do you purchase the food that you eat in between meals (snacks)?
 - a) Grocery store/WalMart b) On campus source (Chic-fil-a, Sandellas, Dr. Jacks) c) vending machines d) I do not snack often
3. How often do you dine out in the US?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
4. How often do you dine out at home?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
5. How often do you drink soft drinks in America?
 - a) Always 7days b) Frequently 5 days c) Sometimes 3 days d) Weekends e) Never
6. How often do you drink soft drinks when at home?
 - a) Always 7days b) Frequently 5 days c) Sometimes 3 days d) Weekends e) Never
7. How often do you eat vegetables/fruit at home?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
8. How often do you eat vegetables/fruit in the US?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never

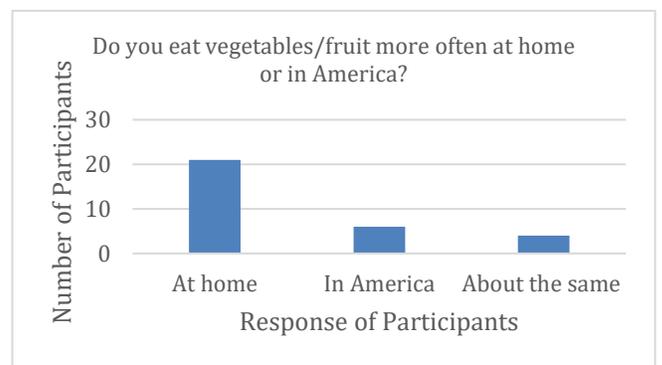
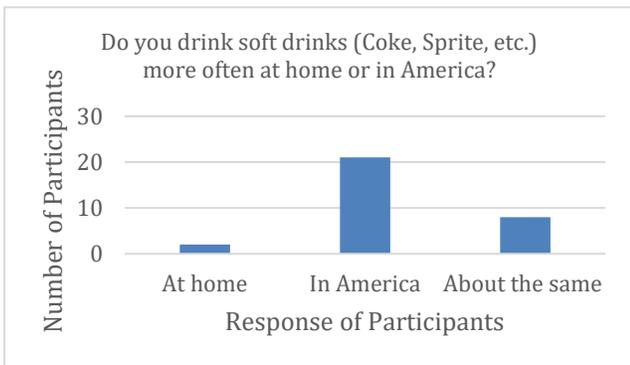
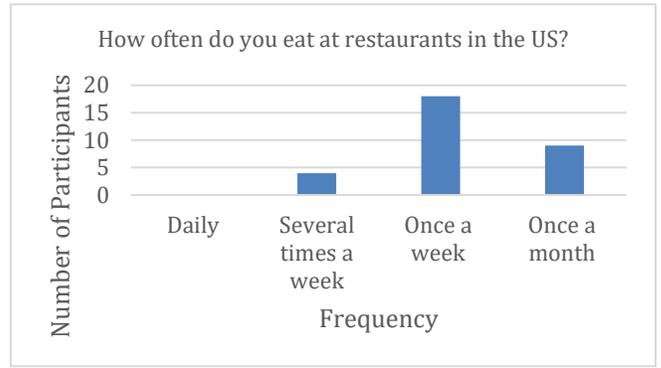
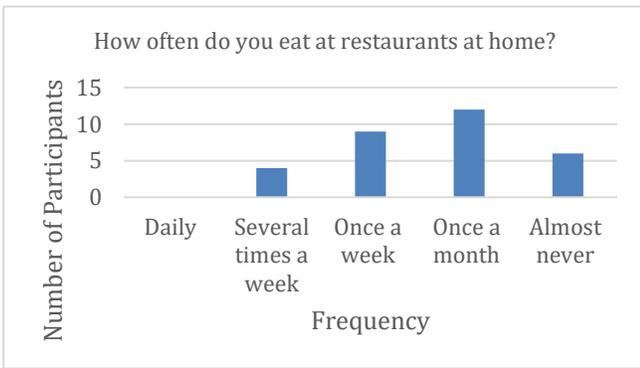
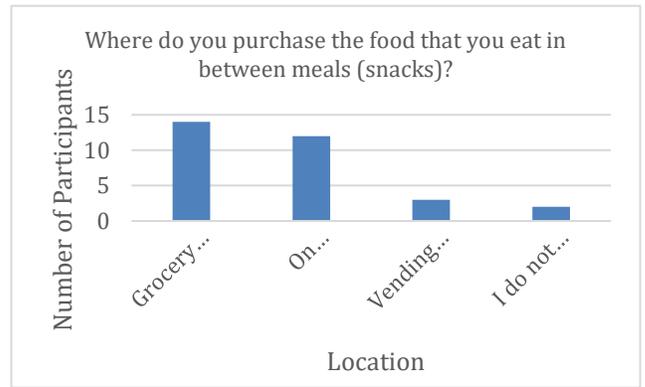
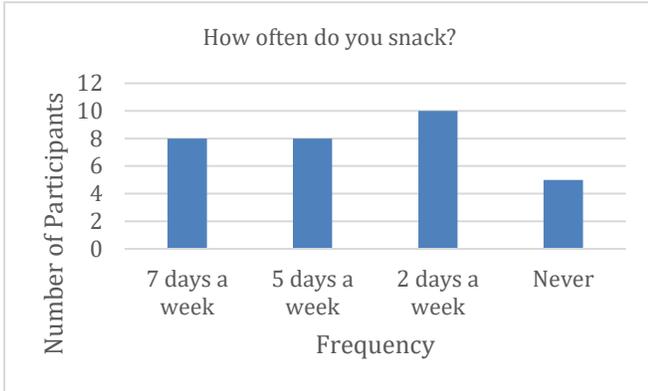
9. How often do you eat meat at home?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
10. How often do you eat meat in the US?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
11. How often do you eat dessert at home?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
12. How often do you eat dessert in the US?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
13. How often do you eat dairy (milk, yogurt, cheese etc.) at home?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
14. How often do you eat dairy in the US?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
15. How often do you eat grains (carbs, bread, rice etc.) at home?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
16. How often do you eat grains in the US?
 - a) Daily b) Several times a week c) Once a week d) Once a month e) Almost never
17. Do you consume larger portions in America than you do at home?
 - a) Never b) sometimes c) always
18. Do you try to make sure that you have a nutritionally balanced meal?
 - a) Yes b) No

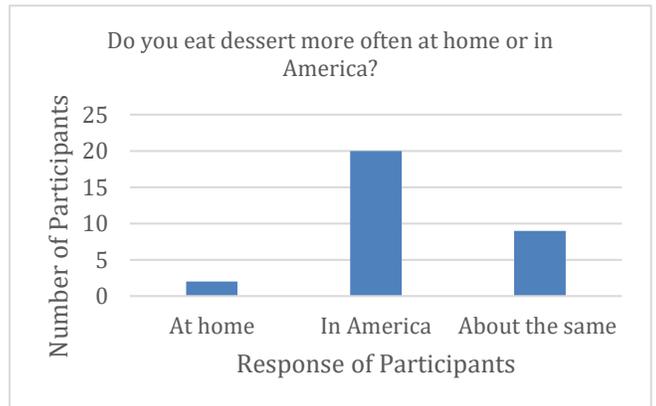
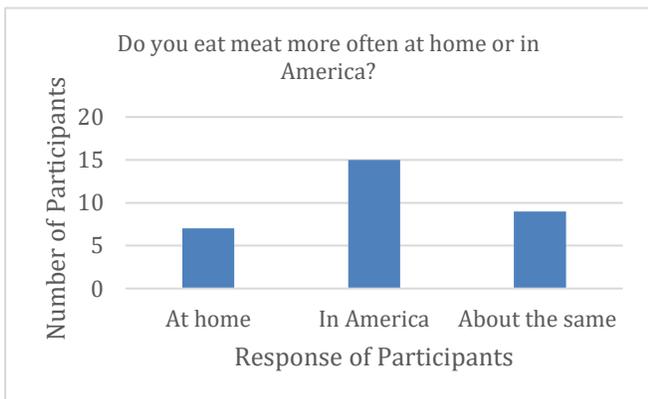
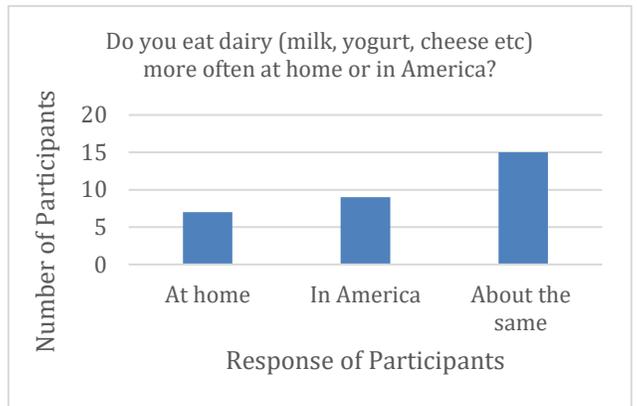
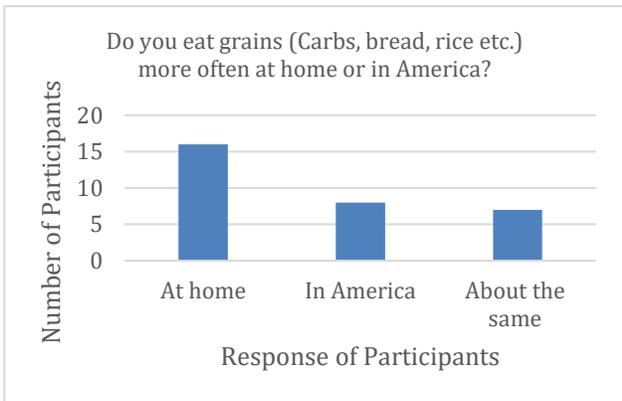
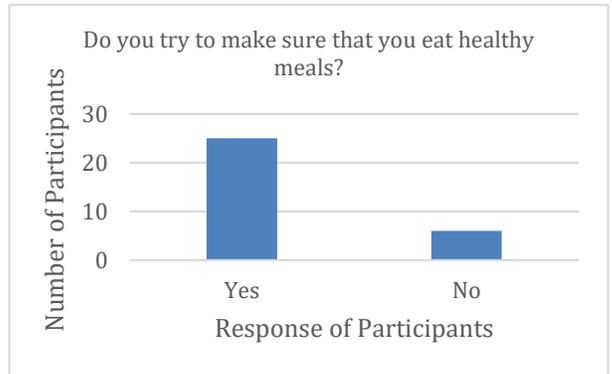
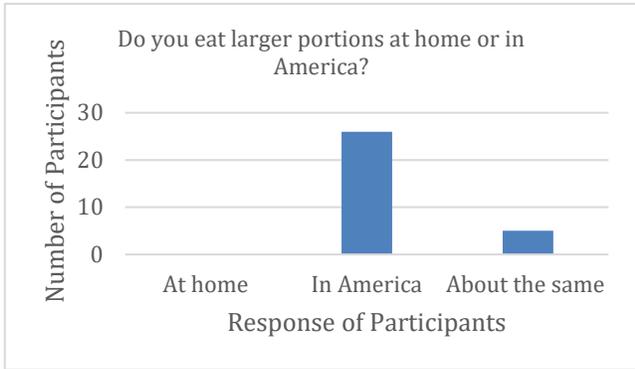
Perceptions

1. How much has the American diet influenced your eating patterns?

- a) Very much b) Somewhat c) Not at all
2. Do you think you have a healthy eating pattern in your home country?
A) Yes B) no
3. Do you think you have a healthy eating pattern in the US?
a) Yes b) No
4. Are you concerned about the effects of your dietary pattern on your body weight?
a) Yes b) No
5. Are you concerned about the effects of your dietary pattern on your health status?
a) Yes b) No
6. Do you believe that food is of vital importance in determining your health?
a) Yes b) No
7. Do you consider the American diet healthy?
a) Yes b) No
8. What is your age? 18, 19, 20, 21, 22, 23, 24
9. What is your gender? A. male B. female
10. What is your ethnicity?
a) European b) African c) Latino d) Asian e) South Asian f) Middle-Eastern g) Other
11. What is your home country? _____
12. How long have you been in the US?
a) Less than one semester b) one semester c) one year d) two years e) three years f) more than 3 years
13. What is your living arrangement?
a) On campus housing/dormitory b) Off campus housing/apartment

Appendix C





Appendix D

