

**Assessing Dietary Changes in International Students
and the Barriers to Healthy Living Abroad: A Review**

Caroline R. Cahill, Stasinios Stavrianeas

Department of Exercise Science, Willamette University, Salem, OR

ABSTRACT

Caroline R. Cahill, Stasinios Stavrianeas. Assessing Dietary Changes in International Students and the Barriers to Healthy Living Abroad: A Review. **JEPonline** 2013;16(4):51-63. The United States hosts the largest number of international students each year. Although mental health studies have reported on students living abroad, extensive information about the potential physiological changes in this population of students remains relatively unknown. Our findings indicate that real and perceived barriers limit the international students' ability to develop healthy living and eating patterns. Additionally, where there is a lack of available data pertaining to international students, we have used college freshmen from the United States as a comparative group for understanding the potential psychological and physiological stressors. College freshman and international students living abroad share similar characteristics, such as relocating to and navigating in a new environment. We propose universities that host international students should offer nutritional and physical education programs that support and encourage a healthy and active lifestyle.

Key Words: Nutrition, Physical Activity, Weight Gain

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INTRODUCTION

During the 2010-2011 school year, 723,277 international students studied in the United States (35). For these students, living and studying in a foreign country and experiencing a different culture can often be accompanied by considerable changes, such as low physical activity, increased stress, and decreased fruit and vegetable consumption (52,61). The social and emotional effects of studying abroad on sojourners have previously been reported (3,6,12,14,23,24,29,55). While we cannot minimize the effects of these sociocultural stressors, it is important to not neglect how studying abroad affects the physical health of students. Our review of the available literature revealed a rather surprising lack of data regarding physiological changes in international students.

International students are motivated to study in the United States for a number of reasons. First, they are eager to experience new ways of thinking and acting in their field of study. Second, studying abroad enhances career opportunities by acquiring experience for future employment in their home country or internationally. Third, more often than not, international students receive a broader and more flexible education than offered in their home country. Fourth, they experience the opportunity to become more independent and build friendships in an intercultural context (56).

With 62% of all international students in the United States paying for their education through family or personal sources, foreign students represent an important financial market for the Higher Education sector. Thus, it seems apparent that universities should actively provide counseling resources to study students who study abroad (56). Besides a lack of mental health and counseling support, students find that studying abroad presents barriers to healthy living and eating. In particular, there is the lack of information, price, and unavailability regarding healthy food choices (17,61).

Yet, despite the expansion of the international student population in the United States, they have remained an underserved group on college campuses (51,70). This is a problem in that the international students' mental health concerns are unique. Unlike refugees or recent immigrants, most international students plan to return to their home countries. They are in the United States only temporarily. Thus, they are a group in transition, many of whom are far from their families, relatives, friends, and support systems. Additionally, the increased demands for cultural and linguistic adjustment often manifest as psychosocial maladaptive disorders (70).

Overweight and Obesity Trends in U.S. College Students

Given the absence of literature regarding the physiological changes in international students, we examined previous studies on United States college students that may be applicable to students who study abroad. In particular, college freshmen offer a unique similarity to long-term international students. Both groups embark on their first year of independence from their families. They also lack the connections and support systems that are necessary for a complete adjustment into the university environment. Adolescence coupled with the collegiate years are important periods in life that involve physiological and psychosocial changes that affect nutritional needs and habits, especially since dietary patterns established during the collegiate years often extend into adulthood (16,21,49,50,77).

Nearly 70% of college students report eating less than the recommended daily servings of fruit and vegetables (2,43). Additionally, less than 50% of the students in college report meeting the American College of Sports Medicine and American Heart Association weekly physical activity guidelines (2). The greatest increases in overweight and obesity occur in people between the ages of 18 and 29, which is the age range of most college students (63). Young adults who establish a pattern of consuming meals high in saturated fats and sodium, along with not engaging in regular physical activity, can develop high cholesterol, high blood pressure, and weight gain, which are risks factors for developing cardiovascular disease (11,13,15,18,19,40,54,67). These non-communicable diseases) (such as coronary heart disease, stroke, obesity, hypertension, type 2 diabetes, and various cancers are the most common causes of morbidity and mortality in the United States (21,75). Even in the face of increasing knowledge, awareness, and education about chronic disease prevention and risk factors among college students and the overall population, these diseases are still highly prevalent.

Between 1991 and 1997, the greatest increase in obesity was found among individuals who were 18 to 29 years of age (7.1% to 12.1%) and those with some college education (10.6% to 17.8%) (34,47). By 2001, among the 18 to 29 year-olds, the frequency of obesity continued to increase (14% to 21%) among individuals with some college education (34,47). In 2011, the results from the National College Health Association Survey (2) showed that 34.1% of the college students reported being overweight or obese. Moreover, while the failure to engage in regular exercise is an important risk factor for obesity and related health problems, only 47.4% of the college students reported meeting the guidelines for the American College of Sports Medicine and American Heart Association for physical activity (28). Overweight and obesity rates are increasing in the United States and most dramatically during the collegiate years. It is also reasonable to conclude that similar effects are happening within the international student population.

Acculturation and Other Stresses for International Students

The nature of studying abroad in the United States requires students to move from their home country to live within a host university community where they often adopt the host culture. This transition to a new culture often predisposes the students to the negative effects of a high alcohol intake, altered dietary practices, and an increase in Body Mass Index (70).

Acculturation is a multifaceted process fluctuating throughout the sojourn due to internal and external factors that include but are not limited to sociocultural skill, motivation, personality, previous international experience, pre-arrival preparation, interaction strategy, and cultural similarity (7). Fluctuations in emotional stress, negative mood states, loneliness, and final adjustment are common (70). Among a group of Japanese international students in the United States, 70% reported a lack of motivation to engage with peers and their study abroad experience (52). According to Brown and

Holloway (7), many students have reported a sense of disorientation (i.e., feeling lost), especially in reference to finding their way around the university town. Simple daily activities such as navigating the local bus route or shopping frequently elicited feelings of disorientation. Students, who did not state a feeling of confusion, reported engaging in pre-arrival preparation, such as researching the location of the university and culture of the host country.

Lifestyle choices (such as food and alcohol consumption and engagement in physical activity) may also change upon studying abroad. This could be linked to lesser availability of desirable food choices or as a result of maladjustment. International study programs that fail to educate the students on host country food options and healthy lifestyle opportunities may leave the sojourners unprepared to confidently buy food abroad (61). As a result, international students have reported a significant decrease in protein, fresh fruit, vegetables, legumes, and fish while increasing their consumption of soft drinks, and alcohol, and snacks (52,59,60,70). Likewise, Muramatsu and Harmer (52) reported that 48% of the Japanese students at an American university increased their consumption of candy and sweets.

Body image appears to play a role in the dietary intake of international students. As an example, as female Chinese students adopt the beliefs and behaviors of the United States students (i.e., acculturation), there are increased reports of bulimia and drive for thinness. Men, on the other hand, with high acculturation scores demonstrated greater behavioral changes to mimic the social norms of the host culture (14). In other words, in the students' attempt to assimilate into the host culture, they may "overcorrect" real or imagined deficits. Female students may become focused on altering their body type that is dangerously thin to be associated with the perceived host culture's body image ideals. Based on these findings, acculturative stressors are believed to be key factors that trigger disordered eating patterns (14,24).

The Language Barrier and Acculturation

Host country language proficiency is a major factor that has been identified as contributing to increased stress for international students. Thus, overcoming the language barrier is vital to the success and welfare of international students (68). This is true in that language skills are important for both academic and social adjustment. If international students cannot communicate with their peers, then, insufficient language skills may lead them to unknowingly choosing unhealthy food options (68,70). Additionally, students who feel unsupported or exploited by the international program staff may also experience maladjustment and security concerns, including financial, health, and social stressors. Security and adjustment issues should be a concern of host universities, especially since security is a basic human right regardless of culture and location (14). The host university staff should incorporate a holistic perspective that includes foreign language instruction, psychosocial support, and cultural training.

Perceived Barriers to Healthy Eating in a Foreign Environment

Dietary habits of international students are influenced by many factors that include, but not limited to, irregular meal patterns, food price, food availability, and convenience. Because traditional foods are often imported to host countries, the price is usually higher, choices are limited, and may only be available at specialty markets far from the university campus (25,39). The lack of appropriate religious "dietary" options disrupts the students' adjustment and ability to eat in cafeterias and in the city of the university (17). Other perceived barriers to healthy eating involve lack of information on healthy food choices, peer pressure, the lack of will power, and the perception of healthy foods as boring. For example, in a 2008 study of international students in Belgium, the women were twice as likely as the

men to be discouraged from healthy choices by perceived unavailability of healthy foods (61). There is also the issue of “meal size” that varies among countries. When studying abroad, students may not be accustomed to meal portion sizes or the number of hot meals available in university cafeterias. In a 2005 survey, 93% of Japanese students at a college in the United States responded that their meal size was much larger than the meal size in Japan (52).

DOMESTIC COLLEGE STUDENTS

A Parallel Group to International Study Abroad Students

The first year of college is a period in which weight and fat gain is likely to occur (1,30,32). In a 2003 study (34) that assessed the diets of college students in the United States, two-thirds of the subjects reported consuming less than five servings of fruits and vegetables per day and 18.0 ± 5.6 g of fiber per day. This is below the United States Department of Health and Human Services guidelines (72). Concurrently, decreased nutrient and minerals intake was observed in international students in Belgium (61). Also similar to international students, food consumption patterns of college students are of a concern because students tend to skip meals, eat foods low in energy, and avoid certain types of nutritious foods (44). In addition, female college students often fail to meet the Recommended Dietary Allowance (RDA) for calcium, iron, and vitamin A, suggesting that female college diets regularly lack essential nutrients. Furthermore, Vickery et al. (74) have reported that both female and male college students consume high-fat diets.

While most research has been conducted on females, the link between weight gain and college enrollment has been generalized to both male and female college students. Entering freshmen females have been observed to gain weight ranging from less than 1 lb after 6 months of college to 8.52 lbs during the entire academic year (10,30,33,34,45). In addition, college freshmen women were 2.6 to 5.2 times as likely as women who did not move from home to gain 15% or more above their ideal weight. In a parallel study of Japanese international students at a college in the United States, rapid weight gain was also observed during their first six months abroad, the average increase was 5.54 lbs for males and 6.05 lbs for females. Additionally, 17 out of 100 students gained more than 5 11 lbs within the same time period (52).

As seen in international study abroad students, many factors also influence domestic students' food choices and preferences, such as taste, availability, and convenience (52,59-61). In addition, there are cost considerations, the influence of peers, hunger, nutritional labeling, and health concerns affect food choice (41,44,50,66). Because college students tend to choose their food on convenience and cost, they may consume high rates of inexpensive fast food that tend to be less healthy (41).

Low Physical Activity Among U.S. College Students

Some researchers suggest that weight gain in college may be due to decreased physical activity, rather than an increase in energy intake (10,34,40). The following factors tend to distract from engaging in physical activity while in college: social support and encouragement, self-efficacy and self-motivation, insufficient education as to why physical activity is needed, campus athletic facilities, public transit, and campus safety (5,9,19,27,40,48,53,63,77). Despite the fact that college presents an opportune time to establish a pattern of regular exercise and healthy behaviors, 57% of college males and 61% of college females report no vigorous or moderate physical activity on three or more days·wk⁻¹ (5,9). In a 2003 study, students reported exercising 2.8 ± 2.1 days·wk⁻¹, which is below the national physical activity guidelines (28,34).

Lack of social support from family and friends is a significant contributor to low levels of physical activity for both male and female students (40,48). Low self-motivation and self-efficacy are predictors

of decreased physical activity among college students. Many students mention lack of time, tiredness, and the perception of exercise as boring as barriers to physical activity (5,26,53). Students report perceived inconvenience, travel-time, and traffic-related stress problems as additional reasons for withdrawing from athletic and physical activity programs. Housing proximity to exercise facilities also plays an important role in collegiate leisure-time physical activity. The intensity and duration of physical activity are increased as proximity to the exercise facilities is increased (26,64). Additionally, students report that time constraints associated with being a student and lack of money to pay the fees associated with on- and off-campus recreation facilities make it difficult to regularly engage in exercise (26,27). Finally, students who incorrectly view themselves as having a normal weight when in actuality they are overweight or obese present a concern. This inconsistency is important. The overweight or obese students may not be emotionally prepared to participate in an exercise program to improve their health even if they recognize a health problem (5,34). With the increased stress and time constraints associated with studying abroad, it is likely that international students experience similar difficulties finding time and motivation to engage in regular physical activity.

CONCLUSIONS

International and domestic students at 4-year colleges report poor diets that are far from meeting the United States national dietary recommendations (16,48,54,59,60,63). These nutritional shortcomings may be due to such factors as lack of nutritional education or understanding, language barriers, cost, and availability, and convenience. Because all students represent an important market for the higher education sector, colleges and universities should be aware of the nutritional and dietary barriers common in academic settings. Moreover, domestic college students do not meet the physical activity guidelines for their age group due to internal and external perceived barriers that include, but not limited to, lack of motivation, transportation issues, and lack of time.

Health Implications of Rapid Weight Gain and Unbalanced Diets

Rapid weight gain has been reported in both international and domestic college students (1,32,52). The rate of metabolic dysfunctions in adolescents has increased (42,58,69). Although the long-term effects of these health patterns have yet to be understood, disordered eating patterns and low activity have been observed in international study abroad students along with rapid weight gain (14,52). Overweight, obesity, poor diet, and low physical activity are prevalent in young adults, which can increase the risk of cardiovascular disease (11,15,18,54,67). Numerous studies have shown correlations between weight cycling (a common occurrence among both college men and women, abdominal adiposity) and difficulty with subsequent efforts to lose weight (4,8,22,31,36,38,54,57,65). While the acute effects of weight cycling have yet to be tested in the long-term and a number of studies have found no acute metabolic disorders due to weight cycling (20,37,62,73,76), they are generally considered to be detrimental to metabolic health. What is important is that young adults learn to adopt and maintain a healthy lifestyle that establishes an ordered pattern of regular physical activity and a balanced diet. Otherwise, the disordered college behavioral patterns will continue into adulthood (16,21,49).

Recommendations

University-sponsored programs that promote nutritional and food-labeling education for all students should be encouraged. These programs would offer both international and domestic students general

information on foods available in cafeterias and local markets. In addition, programs like this should help promote healthy eating by understanding the food options that are available to students. Lack of communicating healthy dietary messages is hindering the innovation of products that can contribute to consumer health and well-being. Health promotion should be viewed as a food culture based on the right foods to eat rather than foods to avoid (i.e., discouraging poor dietary behavior). This will help to encourage suitable weight-control programs (50).

Because weight gain in college may be more attributable to decreased physical activity, rather than an increase in energy intake, colleges should promote exercise interventions (5,9,10,19,26,27,34,48, 53,63,77). These interventions could be presented as a physical education requirement, intramural athletics, or low-cost exercise classes. At the adolescent level, studies have shown that there is a correlation between physical activity and cognitive function. The idea that continued physical activity into the collegiate years would not hinder academic performance should be considered as motive to require physical education or activity courses in the collegiate setting (71).

The lack of dietary and nutritional information is detrimental to the health of students. Additionally, it is important to provide information to college students who are overweight and/or fail to meet the minimum dietary and physical activity guidelines. Without this information and guidelines, it places them at a significant disadvantage for developing lifestyle- and behavior-related chronic diseases associated with physical inactivity and weight gain. Because college students are still developing behavioral patterns, colleges and universities should present an ideal setting for exercise, nutrition, health, and dietary interventions. While many colleges do offer university-based health counseling, why not offer university-sponsored, tuition-based, and cost-effective health education and preventive programs? Lastly, it is clear that more research should be conducted to understand the synergistic effects of psychosocial factors on physical health in international long-term study abroad students.

Address for correspondence: Caroline R. Cahill, Department of Exercise Science, Willamette University, Salem, OR, USA, 07040. Phone (973) 901-1917. Email: crcahill@gmail.com

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