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# Suggested Approaches to Improving Nutrition Status of College Students: A Literature Review

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Suggested Approaches to Improving Nutrition Status of College Students:

A Literature Review

**Abstract**

The unhealthy diet of Americans has led to an increase in number of chronic illnesses and obesity. These poor dietary patterns usually originate from early-developed eating habits of young and newly independent adults. In this literature review the health status and eating habits of college students will be discussed, along with the social factors promoting these behaviors; such as location of living, previous parental guidance with nutrition, and meal preparation. Misinformation appears to have the largest impact on the nutrition status of the college student, suggesting that a stronger emphasis on nutritional education and constant and/or direct exposure to nutrition information should be implemented on campus in order to promote healthier eating habits. This review also provides an analysis of successful collegiate nutrition education programs and suggests approaches to improve the delivery of accurate nutrition information to Grand Valley State University students.

## **Introduction**

Reports from the Centers for Disease Control and Prevention (CDC) reveal that rates of obesity (a chronic illness strongly associated with diabetes), heart disease, and cancer have remained stagnant over the past decade within the 18-24 year-old age group.<sup>1</sup> This is concerning considering that these diseases, found to be among the leading causes of death in the United States, are mostly diet-related and preventable. Successful interventions to promote change in dietary habits at the college-level age are difficult because most students do not physically experience the ill-health effects of a poor diet at this age, and therefore, have a low-perceived threat and susceptibility to these diseases.<sup>10</sup> However, the most important time to develop healthy eating habits is at the college age, when students begin making choices on their own and develop lifestyle habits that are likely to be continued in the future. Thus, while focusing on pursuing a career choice for their future, college students must also focus on their health and wellness at this age because while they may not recognize this, these decisions will impact their future just as much, if not more, than their career choice.<sup>16</sup>

In order to promote healthier eating among the college student population an understanding of their current dietary habits and health status should be established, as well as some of the barriers that might prevent college students from eating healthy. This literature review not only aims to determine the current dietary status of college students and barriers to healthy eating, but also suggests ways to improve eating habits by comparing interventions trialed at other colleges.

## **Dietary Intake**

On average, first year college students gain about 3.86lbs.<sup>17</sup> Although this certainly is no 15lbs as indicated by the “freshman fifteen,” the rapid changes in weight experienced by first

year college students provide implications about their health behaviors, and more importantly their eating habits. Nutritionally, many students fail to meet the national guidelines and goals of Healthy People 2020. The nutrients most lacking in the typical college-student's diet are fiber, vitamin D, vitamin E, calcium, magnesium, potassium, and iron (more common in females).<sup>20</sup> Strikingly, a rather recent study published by the American Heart Association indicated that less than 1% of adolescents between the ages of 12 to 19 are meeting 4-5 of the recommended dietary guidelines, including intake of more than 4.5 cups per day of fruits and vegetables, more than two 3.5-ounce servings per week of fish, more than three 1-ounce servings per day of whole grains, less than 1500 mg/d of sodium, and less than 450 kcal/week of added sugar in sugar-sweetened beverages.<sup>15</sup> Many other studies focusing on intake of specific food categories in the college population, such as dairy, fruits, or vegetables, are in support of these findings.<sup>7</sup> These foods are by in-large some of the main sources of the nutrients most lacking in the college diet.

In addition to failing to meet current dietary recommendations, students are also exceeding the maximum level intakes suggested for saturated and trans fats, sodium, and refined sugars through over-consumption of energy-dense snacks that are high in fat, sodium, and/or sugar. An estimated  $543 \pm 671$  kcal/day from combined forms of sweetened beverages contributes to the caloric intake in the typical college diet.<sup>19</sup> Consuming an obesity-provoking diet that is high in fat and sugar has been shown to produce lack of energy, inability to concentrate, poorer academic performance, feelings of apathy, lack of motivation, low self-confidence, changes in temperament, and disruptions of sleeping patterns; side effects which most students try to avoid.<sup>6</sup>

While staying energized, focused and fit are reasons many college students choose to eat healthy, future consequences of their daily eating habits should be another motivating factor to

eat healthy. Bones stop storing calcium around age 30 and bone density decreases from that age and beyond. This leads to early development of osteoporosis and increased likelihood of fractures. Thus it is important to build up calcium stores throughout childhood, continuing through the 20's.<sup>2</sup> Also, atherosclerosis has been found in children as young as 6 years old. This study also suggests that lesions indicative of development of atherosclerosis are found in every 1 in 6 teenagers.<sup>16</sup> However, it is difficult for most college students to understand how their current diet may have an impact on their future health when they do not experience the ill effects of poor dietary choices at this young age. Thus, rather than focusing on the future ill effects of today's poor dietary choices, it may be more effective to understand and address the present motivations college students share when choosing to eat healthy and the challenges they experience when attempting to do so, so that appropriate interventions can be implemented to promote change in the current dietary intake of many college students.

## **Barriers**

In order to promote healthy eating among the college population, the barriers students face when attempting to eat healthy should be discussed. Some of the most common obstacles students talk about when trying to eat healthy involve both environmental and social influences.<sup>5</sup> The diet of college students is strongly influenced by common environmental factors such as time management/schedule, accessibility of foods, and location of eateries. Many students tend to schedule back-to-back classes or are involved in so many organizations that they skip meals. Oftentimes, this results in excessive calorie consumption at night. Few campus dining facilities are open late at night, causing the healthier options to be inaccessible to the students. So students will often resort to food that is fast, convenient, and often calorie dense foods high in fat and sodium.

Cost of healthy food is another reason many college students fail to eat healthy. College students usually do not have a job or do not earn a large income, and therefore, either they do not have the money or are not willing to spend the extra dollar or two on the healthier item when cheaper, more satiating options are available, such as chips or candy. Students who have a meal plan do not see this as a barrier as much as those who do not have a meal plan, so as long as the meal plan includes options such as fruits and vegetables. Locations of eateries on campus are an important barrier to consider as well because it is likely that a student will eat at the closest dining facility, which may or may not have healthy options.

Along with these environmental and physical barriers to eating healthy, there are various social factors that have an influence on the college diet as well, such as eating with friends, family support, emotional experiences, and the pressure to fit in with society. Many college students reported eating with their friends even when they did not feel hungry.<sup>5</sup> Family members often send “care packages” to their child containing energy-dense snacks that are high in fat and sugar. An average of 22,888 calories may be found in one dorm room where most items were purchased by parents and were higher in calories and fat than what students purchased.<sup>11</sup> Even though it would seem that students are making healthier choices than their parents considering that the items found in the dorm rooms purchased by the students were healthier than those purchased by their parents, students who had more items in their room stated that they did snack in their dorm room more often.

College students experience a significant amount of stress due to their busy schedules and demanding work load. Thus, it is not surprising that a 0.4% weekly increase of unhealthy snacks consumed throughout the semester has been found, with an 8% increase in unhealthy choices near the time of examinations.<sup>18</sup> The dramatic increase in purchases of unhealthy foods around

the time of examinations raises the possibility that stress may have a strong influence on student's dietary intake. However, once the student has developed strong eating habits for healthier foods, it becomes easier for the student to control the impulsive desire to purchase unhealthy snacks.<sup>10</sup>

While many of these social factors are more specific to the college life, some social factors that relate to the society at large also influence the dietary habits of college students. The culture of the United States has created an image for both men and women that people feel they need to match in order to be accepted in society. Thus, women typically try to lose weight and will use extreme dieting habits to achieve this goal, while men aim to gain muscle, taking supplements or eating altered diets that do not provide these young adults with the nutrients they need<sup>6</sup>

Lastly, another barrier to consider that may not be considered an environmental or social influence but is perhaps an easier barrier to change, would be the lack of knowledge about nutrition. Students who eat healthier often display more knowledge about current national dietary recommendations.<sup>4</sup> Therefore, keeping these barriers in mind, several interventions may be proposed in order to combat these challenges and change the unhealthy eating habits of college students.

### **Interventions**

Various types of interventions to promote healthy eating habits among the college population have been proposed and trialed at different universities. Some of these interventions have had some success with this population while others do not seem to influence the eating habits of college students. Understanding why some of these interventions have not been successful is important for determining what types of interventions may be more successful.

Point-of-purchase (POP) interventions have trialed numerous times in the all-you-can-eat college dining facilities. POP interventions involve placing posters near the entrance of the facility, table-tents, and reminders right next to the targeted items that encourage the college students to eat healthy.<sup>12</sup> However, POP interventions have not been found to be highly successful. When the intervention is placed right next to the food, students rarely notice or pay attention to the sign and at that point have already chosen to eat the food.

To be most effective, if a university chooses to use this type of intervention to encourage healthy eating on campus, it is suggested that the POP messages be placed near the entrance of dining facility where they are highly visible and serve as a reminder to eat healthy before the student has already chosen what to eat.<sup>9</sup> Also messages should target concerns of the typical, present-oriented college student, such as weight management, energy, and concentration.<sup>3</sup>

Furthermore, to accommodate this technologically-savvy generation, online social networks seem to be successful in the college setting as well.<sup>13</sup> Also, students are more responsive to messages shared from their peers. Sending weekly reminders to eat healthy or providing nutrition information would help students to maintain their newfound healthy eating habits.<sup>14</sup>

While both online and POP messages provides college students with a quick reminder to eat healthy, one of the methods or interventions that have seen a more effective change in dietary habits with college students is education. Some universities have examined the change in dietary habits after students took a course about nutrition and found that students did eat healthier. If not, students at least reported being more aware of how to eat healthy.<sup>8</sup> To better understand how the barriers to eating healthy and proposed interventions interact with one another providing an example of these interactions on the micro level is helpful. In this case, Grand Valley State

University will be used as an example to demonstrate how this institution is successful in promoting healthy eating and where improvements can be made.

### **Grand Valley State University**

Overall, Grand Valley State University does a decent job allowing the typical college to eat healthy on campus. The requirement for most freshman purchase a meal plan removes the barrier of cost when the student decides to eat healthy because no physical form of money is being exchanged at the time of purchase. In addition, Grand Valley does sell fresh produce, such as fruits or precut vegetables (with a limited selection) in the convenient store on campus, but whether or not students are purchasing these items cannot be determined at this time without further research. Some recent improvements that Grand Valley has made to their menu items is offering students healthier substitutes in the combo meals and staff are encourage to remind students of these healthier options. Instead of eating fries or pop, students now may choose an apple, carrots, soup or milk with their meal.

However, like any other university, Grand Valley State University still has room for improvement when enabling its college students to eat healthy. Thinking about some of the barriers previously discussed, Grand Valley may want to reconsider extending their hours of operation. Other than the convenient stores, which mostly offer snack foods, there are only two places where students are able to purchase a hot meal after 8pm until midnight. Many students have a class from 6pm until 9pm and are hungry when they are done, but their options are limited.

There is a place on the north end of campus where most of the freshmen reside, called Kleiner Commons, which remains open until midnight but offers no healthy options for meals. Kleiner used to be open until 2am and it would be interesting to see how many students would

prefer that Kleiner be open later, and whether or not they would eat there at those times. Along with that healthier options should be offered. The other place open until midnight, on the south end of campus, known as the Connection, offers a healthier late night option of ready-to-be-made sandwiches. Papa John's Pizza is also available at night, but this eatery is not considered part of the meal plans. The problem with these being the only two dining facilities available to the students at night is that their options are limited and rather unhealthy.

Also, while Grand Valley continues to make improvements by offering healthier substitutes for meals, some of the dining facilities do not offer a healthy substitute or the choices are quite limited. For example, at Kleiner Commons, a student may purchase a vegetable cup as a substitute for fries with a meal, but a fruit cup is not part of the meal. Even though fruit cups and vegetables only cost around a dollar, students do not purchase these items because they are not included in the meal plan or the portion size is so small, so they more likely choose the less healthy option that is more calorie-dense because it comes in larger portions relatively for the same price.

Grand Valley has also made efforts to educate its student population and aid in making healthier choices by providing nutritional information on the internet. Grand Valley has also tried POP messages next to healthy options but it appears this has been discontinued possibly due to its ineffectiveness.

Further investigation is needed at this institution in order to understand what barriers exist and how this institution is working to improve the eating habits of its students. The brief descriptions of the barriers to eating healthy provided here will be addressed in more detail after further investigation is conducted at GVSU in the future.

### **Further Investigation**

In order to have a better grasp on the dynamics of eating healthy at GVSU, research will begin with a survey (See Appendix 1). The survey consists of questions that will aid in determining what types of foods students are choosing to eat by looking at which places they most frequently eat and what entrée is typically chosen at these facilities. Barriers to eating healthy will be assessed as well with general questions that apply to the barriers previously discussed in this review.

Once the most commonly eaten entrees are established based on the results of the survey, a nutritional assessment of the students' intake will be made using the information provided on the GVSU website. Interventions will be suggested once the barriers are determined as well. However, there will not be time to administer these interventions, and future investigation is encouraged to those interested to determine the success of these proposed interventions.

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## Appendix 1

Do you have a meal plan?      Yes      No

If yes, what type of meal plan do you have?

19+    14+    10+    5+    value+    casual+    commuter

What dining hall do you eat at most frequently?

Kleiner            Einstein            Fresh            Fuel            Kirkhof            The Connection

At Kleiner, what entrée item do you most frequently purchase (choose by menu options listed below)?

Caliente            Montague's Deli            Bene Pizza            Grille Works            Sushi            Other

I never eat at Kleiner

At Fresh, what entrée item(s) do you most frequently choose from? (Please circle all that apply)

Mediterranean Oven

Grand Traditions/Soup

The Grill

Bakery

Produce/Salad bar

Other

I never eat at Fresh

At Fuel, what entrée item do you most frequently purchase (choose by menu options listed below)?

Bleecker St.            Freshen's Smoothies/Crepes            Jump Asian Cuisine            Papa John's Pizza

Other            I never eat at Fuel

At Kirkhof, what entrée item do you most frequently purchase (choose by menu options listed below)?

Bene Pizza/Pasta      Zoca      Grille Works      Croutons      Subway      Sushi  
Other                      I never eat at Kirkhof

At the Connection, what entrée item do you most frequently purchase (choose by menu options listed below)?

Green plate      Grill      Salads      Deli Sandwiches      Other      I never eat here

Have you ever viewed the nutritional information available about food on campus either online or at a dining location?

Yes      No, but I was aware it was available      No, I was unaware it was available

If yes, how often do you view this nutritional information?

Never      Rarely      Sometimes      Usually      Always

If you were unaware of this information, would the nutritional information impact your dining choice?

Yes      No      Don't Know

How often are do you try new/unusual/foreign foods on campus?

Never      Rarely      Sometimes      Usually      Always

If you knew these choices (refer to the question above) were healthier, how likely would you eat it?

Not at all      Unlikely      Somewhat likely      Likely      Very likely

When eating on campus, how often do you take into consideration the nutritional value of your choice?

Never      Rarely      Sometimes      Usually      Always

Do you believe that most of the food choices provided on campus are

Very Unhealthy      Unhealthy      Somewhat Healthy      Very healthy

I find it hard to eat healthy because

Lack of time      Social influence      Money      Available dining      I do not find it hard

I try to eat healthy

Never      Rarely      Sometimes      Usually      Always

Overall, how would you rate your diet?

Very unhealthy      Unhealthy      Somewhat healthy      Very Healthy

Age \_\_\_\_\_

Gender:      M      F

Class:      Freshman      Sophomore      Junior      Senior      Graduate

Other

Full time student?      Yes      No

Where do you live?      On-campus      Off-campus      At home(with parents)

Other

\*need to include free response of what is viewed as healthy/unhealthy; include some questions regarding late-night eating habits+on campus dining; maybe a question too about eating in the dorm/at home? should include a question about eating in the morning (breakfast) as well