

“I Know Nothing”: Perceived Barriers to Fruit and Vegetable Consumption among Mississippi College Freshmen Living on Campus

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Abstract

College freshmen, particularly those living on campus, are at risk for developing eating habits that could lead to chronic disease and obesity from eating an unbalanced diet. This study identifies the perceived barriers to fruit and vegetable consumption among freshmen in Mississippi, a state facing acute obesity-related public health crises. Six focus group interviews were conducted with freshman (N=33) from a public university in Mississippi. Interviews were recorded, transcribed verbatim, and analyzed using a grounded theory approach. Three themes emerged, as participants: 1) Lacked education regarding fruit and vegetable consumption, 2) perceived a lack of access to fresh fruits and vegetables, and 3) perceived social influence to eat unhealthily. Practice implications include the need for higher-education leadership to provide increased informational resources about healthy foods to students living and eating on campus while increasing the availability and visibility of fresh fruits and vegetables in student dining and food purchase areas.

Keywords: Nutrition, qualitative methods, obesity, college students, emerging adults

Colleges freshmen are a key demographic for research regarding perceptions of fruit and vegetable consumption, as studies show that college freshman do not consume a balanced diet and are at risk for chronic diseases and obesity (Slawson et al., 2013; Levitsky et al., 2004; Anderson et al., 2003). Individuals in this group begin to establish dietary habits that affect their health status as they age (Nelson et al., 2008). In fact, research indicates that college freshmen are likely to gain weight during their first year in college, particularly if they live on campus where they have easy access to foods high in calories, fat, and sugar, and “all-you-can-eat” buffets (Anderson et al., 2003). Over time, food behavior and weight gain in college can lead to obesity and chronic disease in adults. Therefore, dietary habits should be addressed in college freshmen, and, consequently, health status can improve as students age. Conversely, research shows students who live on-campus have increased access to fruits and vegetables (Brown et al., 2005). Availability is a key factor for this population. Studies reveal that students who live on-campus have increased fruit and vegetable intake compared to students who live off-campus (Granner et al., 2004). In addition, students who live off-campus report higher BMIs (Brunt et al., 2008). More fruits and vegetables are offered to students who live on-campus, since the majority of students have prepaid meal plans. The burdens of fruit and vegetable preparation and cost are removed for on-campus students. As a result, on-campus students consume more nutrient dense foods than students who live off-campus (Granner et al., 2004). On-campus students who eat in dining halls also typically have access to salad bars and other fruit and vegetable options, thus, increasing access to fruits and vegetables and improving consumption (Brunt et al., 2008). It is not clear, however, how access and availability are understood and evaluated by college freshmen living on campus.

The Behavior Risk Factor Surveillance System (BRFSS) reports that only 17.2 percent of adults age 18-24 years old consume recommended servings of fruits and vegetables each day (U.S. H.H.S., 2013). Inadequate fruit and vegetable intake within the diet can be linked to the 64.9 percent of Americans who are overweight or obese (U.S. H.H.S., 2013). Furthermore, poor fruit and vegetable intake is inversely associated with chronic disease (Hung et al., 2004). The BRFSS reports that Mississippians' total consumption of fruits and vegetables is lower than the reported national median and that only 17.2 percent of Mississippians age 18-24 self-reported consuming more than five servings a day (U.S. H.H.S., 2013). The Department of Health and Human Services (DHHS) and United States Department of Agriculture (USDA) recommend Americans consume five or more servings of fruit and vegetable per day to reduce health risks and promote positive health (McGuire, 2010). Adequate fruit and vegetable consumption is associated with decreased risk for chronic disease and obesity (Hung et al., 2004).

While several studies have examined the interplay of barriers and enablers impacting healthy eating among college students, including social and physical environments, literature focused on students living on campus, and thus primarily consuming their meals and snacks in dining halls and other university-contracted outlets is lacking (Greaney et al., 2009; Lacaille et al., 2011). The goal of this study is not to achieve generalizability but to understand the lived experiences of participants in this at-risk group. First, we focus on college freshmen because these individuals are beginning to make their own dietary decisions, and these decisions can impact long-term health and health behaviors (Bazzano et al., 2003). Freshman students enrolled in the institution from which participants were selected are required to live on campus, are less likely to have their own transportation, and are more likely to rely on on-campus food options (on-campus residents are required to have a meal plan). We focus on Mississippi residents, as these individuals are less likely than residents of other states to consume fruits and vegetables and are more likely to face negative health outcomes such as obesity and heart disease. As a result, fruit and vegetable intake should increase among freshmen, as limited fruit and vegetable intake has been associated with a lack of availability (Hanson et al., 2005; Zenk et al., 2005).

The purposes of this research study are to identify, describe and understand barriers to fruit and vegetable intake in college freshmen living on campus. Identifying, understanding, and describing influences of sociodemographics and personal characteristics of dietary intake in college freshmen are necessary to develop successful interventions to improve dietary intake of fruit and vegetables. Previous literature on the topic of eating behaviors among college freshman has been mostly quantitative in nature (Slawson et al., 2013; Levitsky et al., 2004). In fact, most studies on eating habits and obesity among college freshman focus almost exclusively on biometric measurements such as weight gain and waist measurements. We argue here that qualitative focus groups may provide rich information about the perceptions, emotions and thoughts regarding fruit and vegetable intake and the challenges facing college freshman considering such behaviors (Stewart et al., 2006). Focus groups have been shown to be an effective way of identifying barriers and enablers to healthy eating among specific populations, including college students, low-income populations, and multi-ethnic populations, all of which are represented in our sample (Greaney et al., 2009; Lacaille et al., 2011; Haynes-Maslow et al., 2013; Lucan et al., 2010; Eikenberry and Smith, 2004; Yeh et al., 2008). Our study takes this approach a step further by focusing on a population whose members live in the same physical environment, inhabit the same social environment, and are afforded the same fruit and vegetable options based on their mandatory meal plan.

2. Method

2.1 Focus Group Participants

The participants in this study consisted of 33 college freshmen who agreed to participate in focus groups. Six focus groups were conducted and limited to specific times and number, separated by gender to account for potential gender differences and to compensate for any reticence to discuss health and dietary habits between individuals of different genders. Three focus groups for females and two focus groups for males were conducted, ranging from 4-10 members for females and 5-6 members for males. Existing literature suggests that 3+ participants per group allows for both variation in discussion and opportunity to participate when sharing knowledge and experiences (Carlsen and Glenton, 2011). Participants' demographic characteristics are outlined in Table 1. Participants were recruited from online survey panel in which all freshmen at the researchers' institution were eligible to participate. The focus groups took place during the winter of 2015 at a large public university in Mississippi. The methods and procedures of this study were granted IRB approval by the researchers' institution after full review.

Table 1 Participant Demographic Characteristics; N = 33

Demographic	Characteristic	n
Gender	Female	22
	Male	11
Race	Asian	2
	Black	4
	White	26
	Other/NA	1
Age	18	15
	19	14
	20	3
	21	1

2.2 Interview Protocol and Procedure

The authors of this article were responsible for the collection, analysis, and interpretation of the data. Data was collected as part of a graduate thesis project concerning barriers to fruit and vegetable consumption among college freshmen. In the quantitative phase of this project, self-report measures (N = 224) were used to collect data regarding perceptions of fruit and vegetable consumption as well as barriers to consumption. Results indicated that sociodemographic factors (socioeconomic status, gender, race) and external factors (parental style, access, availability) impacted fruit and vegetable consumption, but such data could not address at what level and in what manner these characteristics or impediments functioned. Focus group volunteers were recruited from this pool of respondents.

Individual, oral informed consent was obtained from each participant for audio and video recording. Participants were informed that their participation would have no impact on grades in any courses, but they received a \$10 gift card as an incentive. A co-investigator ran the focus groups and assumed a role of engaging discourse, facilitating sharing, and ensuring all participants an opportunity to speak. The CI followed a semi-structured approach, based on the Social Cognitive Theory (SCT) in an effort to keep the discussion focused on the research objectives (Table 2) (Bandura, 2004). Focus groups were audio and videotaped and transcribed, each lasting about one hour. Transcriptions were used for analysis.

Table 2 Semi-structured Question Schedule for Focus Groups

Question Type	Question Text
Descriptive	<ul style="list-style-type: none"> • Since entering college and moving on campus, what types of foods do you eat? • Describe how your eating habits have changed since you moved away from home.<i>Probe: General health</i>
	<ul style="list-style-type: none"> • How often should you consume fruits and vegetables relative to other foods?
Knowledge	<ul style="list-style-type: none"> • How often should you consume fruits and vegetables relative to other foods?
Evaluative	<ul style="list-style-type: none"> • What are the health benefits of consuming fruits and vegetables? • Who or what influences your eating habits? • Why don't you eat more fruits and vegetables?<i>Probe: Weight management</i> • What might make consuming fruits and vegetables more appealing to you?

2.3 Data Management and Analysis

Focus groups allowed for group discussion to assess current dietary habits, fruit and vegetable knowledge, food preferences, barriers of fruit and vegetable intake, and social norms of dietary intake. Members were asked scripted questions and asked to verbally respond to questions. Once the focus groups were completed and transcribed, the transcriptions and CI field notes were consulted for data analysis. Data were analyzed using a latent and manifest coding technique (Strauss et al., 2008). For manifest coding, each transcript was analyzed line by line, and quotes and passages relating to the SCT-model (personal factors: attitude, knowledge, environmental factors: social influence, access, and behavioral factors: self-efficacy, skills and abilities) and relevant to the research question were identified by each of the three authors. For latent coding, entire paragraphs and/or the language of entire interactions relating to SCT were used to answer the research question. Once this process was completed, passages and quotations that addressed the question were arranged in a separate word processor document file.

This document was then analyzed by the principal investigator for emerging themes regarding one primary research question: What barriers exist for fruit and vegetable consumption among college freshman living on campus? The two co-investigators verified these themes.

3. Results

Data analysis resulted in three large themes, one cognitive and two environmental – limited understanding of healthy eating habits (cognitive), limited access to fresh fruits and vegetables on campus (environmental), and social influences to eat unhealthily (environmental). Interestingly, behavioral factors, such as self-efficacy, did not emerge as a major theme from this data. The first theme had one sub-theme, limited awareness of nutritional guidelines, and the second theme had two sub-themes including lack of time, and prohibitive costs. Table 3 shows additional representative quotes from the large themes and subthemes. All three large themes and the three sub-themes are discussed below.

Table 3 Additional Representative Quotes Regarding Barriers to Fruit and Vegetable Consumption

Barrier	Illustrative Quote
Limited understanding	“I really don’t remember what it was. I really, I know there is a certain amount we are supposed to eat, but I don’t think I get that much.” (white female)
Limited awareness	“You just hear eat vegetables. Eat fruit. You don’t always hear why you should eat, but just that you should.” (white female)
Limited access	“They’re not fresh. It’s not fresh fruit so I’m not going to eat it.” (white male)
Limited time	“How I eat is actually not like eating at meal times, I’m actually busier so I eat when I can. Really schedules and all that stuff are a big part of how I eat here in college.” (white male)
Prohibitive costs	“I really like a lot of exotic fruits or vegetables like pineapple and uh I don’t know things that aren’t really available in stores say in Mississippi, so I don’t...they are more expensive so I don’t eat them very often.” (black female)
Peer influences	“You kind of look at your friends’ plates and think, ‘Should I be eating close to that? Do I like that? What are they eating?’” (white female)

3.1 Limited Understanding of Healthy Eating Habits.

Among our sample of college freshmen, many of whom are making dietary decisions for the first time, there was a general sense that students did not have a clear understanding of what constituted healthy eating, especially in terms of daily fruit and vegetable consumption. The majority of students discussed this issue, as expressed in these representative quotes:

“I know I’ve heard like 4-5 servings of fruits and vegetables per day, but I don’t know where I got that from, probably like the Internet or something.”

Another freshman put it most succinctly, elucidating an opinion shared by many in the group: “I know nothing.”

In addition to the general sentiment that freshman lacked the knowledge necessary to make informed decisions about fruit and vegetable consumption, participants also directly commented on a specific barrier to fruit and vegetable consumption, a limited awareness of healthy fruit and vegetable consumption recommendations. This sub-theme is addressed below.

3.1.1 Subtheme: Limited Awareness of Nutritional Guidelines.

A subtheme of a limited understanding of fruit and vegetable consumption concerned a lack of awareness of nutrition guidelines for adequate fruit and vegetable consumption. Participants consistently reported confusion regarding how, when, and why fruits and vegetables should be eaten and thus were likely to avoid thinking about healthy eating. This theme was exemplified in the following excerpts. One student expressed her confusion regarding the proper time of day to eat fruit:

“They say you’re not supposed to eat fruits after four or five or clock or something because they say if you go to bed when you’re supposed to it turns straight to sugar. So, I wouldn’t say you’re supposed to have fruit at dinner. I don’t know but I’m just saying.”

One freshman linked his lack of awareness of healthy eating habits with his decision-making at mealtime: “Sometimes you don’t think about vegetables or fruit. You just go straight to the food real quick. You eat it and go. You’re not really thinking okay I need to be healthy so I need to get this and this and this.”

Participants in this study felt confusion about when, why, and how often to eat healthy foods – especially fruit. We argue that this uncertainty avoidance, which leads to an avoidance of fruit and vegetable consumption, stems from a lack of awareness of nutritional and dietary guidelines.

3.2 Limited Access to Fruits and Vegetables on Campus.

The second general theme that emerged from the focus group discussions was participants’ lack of access to fresh fruits and vegetables. Because the participants lived in on-campus housing, their diets were limited to items available to them in dining halls or in restaurants on- and off-campus. The general sentiment was that participants were willing to eat healthy foods – especially fresh fruits – if such foods were more readily available to them. When fruits were available, the variety or freshness was perceived as lacking. This was discussed by a majority of freshman, as expressed in the following representative quotes. One participant stated her desire to eat fruits and vegetables, but was frustrated by limited access to those foods associated with living on campus:

“I try to eat the same. Kind of like I had back out home, but there’s a lot less variety. It’s just harder. It’s hard to keep it like it was at home, but I try.”

Another compared the availability of fruits from home with what she encountered on campus:

“I think the lack of variety of fruits has decreased significantly my intake of fruits. Back home, I had all types of fruits. From watermelons to grapes. Here I’m limited to apples and bananas.”

In sum, freshmen felt both the quality and availability of fresh fruits and vegetables for purchase on campus was lacking, thus inhibiting their intake of these healthy foods.

3.2.1 Subtheme: Fruit and Vegetable Consumption is Time Consuming.

A first subtheme of access as a barrier to fruit and vegetable consumption was students reported lack of time. Participants admitted they would like to eat healthier but were not willing to sacrifice the time necessary to prepare their own meals, thus limiting themselves to dining options on campus. There was a general sentiment that healthy eating, in the form of fruit and vegetable consumption, was too time-consuming and not a good fit for typical student mealtime routines, as expressed in these two representative comments. One freshman described how her living situation was un conducive to cooking:

“I would say it’s a time thing, it’s easier for me run to the Perry or the Union to grab something than it would be for me to utilize the kitchen in my dorm and cook something. Like having to get everything together and take it down the hallway and then use that kitchen and like clean up and everything... that may take like an hour, just to make like one meal where as I can just walk to the Union and within five minutes have dinner.”

Students in this sample clearly felt that the convenience of on-campus fast food or “grab-and-go” options fit better with their class and activity schedules, which do not allow for lengthy meal breaks, and outweighed their desire to eat healthy.

3.2.2 Subtheme: Fruits and Vegetables are Expensive.

A second subtheme related to a lack of access to fruit and vegetable consumption concerned perceptions of the prohibitive costs of fresh fruit and vegetables. Participants noted that prepackaged and preprepared foods tended to be cheaper options, and cost was a determining factor in decision making at mealtime. Representative quotes below exemplify this factor. One student said cost often prevents him from purchasing fresh fruits and vegetables: “Mine’s mostly the price of it all because I am paying for it myself and so if it’s more expensive than what I can get for something else then I may or may not get it.”

Another, describing her decision-making process, put it most succinctly: “Yeah, cost is a big thing.”

The second large theme, a lack of access to fruits and vegetables among college freshmen living on campus, was supported by two subthemes, a lack of time to prepare fresh foods and the perceived prohibitive costs of purchasing fresh foods. Participants overwhelmingly noted that appealing fruits and vegetables simply were not available to them in on-campus dining areas. When they were available, they were either too costly, or required too much time to purchase and prepare.

3.3 Eating Decisions are Peer-Influenced.

A third large theme that emerged during analysis of the focus group discussions was the influence of social factors on food consumption behaviors. Participants reported that the behaviors of close others, particularly friends and relational partners, impacted participants' decisions whether or not to consume fruits and vegetables. If participants were dining with others who selected fruits and vegetables at mealtime, they were likely to consider doing the same. This process is reflected in the following representative quotations. One student expressed a thought shared by many participants -- a relational partner's dietary choices often impacted them:

"I'll eat whatever I want. But when I'm with my boyfriend, who's this tall twiglet of a person, and he comes back with a salad, I'm like, 'Aww, maybe I shouldn't get four pieces of pizza today, maybe I should get two and like cranberry juice or something.' I don't know."

A second agreed that her friends' dietary choices impacted hers' at mealtime: "If it looks good on their plate, maybe it's going to look good on my plate, and I'm going to want to eat that."

Another freshman expressed this sentiment most succinctly: "I'm definitely influenced by the people I hang around with."

A final participant described the contradiction she sometimes experiences when discussing fruit and vegetable consumption with her friends: "...I could tell someone to eat fruits and vegetables, but if I had to hear someone telling me that and they don't kind of follow it, then I'm going to be like 'Why do I have to follow it if you don't follow it?'"

In sum, then, a perceived lack of education, lack of access, and social influences from peers impacted decisions to consume fruits and vegetables, often serving as powerful barriers to healthy eating.

4. Discussion

Mississippi college freshmen living on campus voiced their perceptions of fruit and vegetable consumption, revealing powerful barriers to healthy eating behaviors such as a lack of education, a lack of access, and the influence of peers. A limited understanding of how and when to consume fruits and vegetables, coupled with a perceived lack of access to fresh fruits and vegetables on campus, often led to a reluctance or outright refusal to consume these foods. These perceptions were particularly relevant when mirrored by peer behavior that serves to further constrain fruit and vegetable consumption.

4.1 Practice Implications

Because many college freshmen are making dietary decisions on their own for the first time, university administrators, foodservice representatives, and health practitioners should target this group for education and intervention. A lack of education can be addressed immediately through increased informational resources available to students living and eating on campus, along with healthy eating classes and interventions targeted at residence and dining halls. Combatting a perceived lack of access can also be immediately addressed through increased availability of "grab-and-go" fresh fruits and vegetables in dining halls, convenience stores, and common areas. University administrators can also pressure foodservice vendors to make more healthy options available for on-campus diners. Peer pressure and mirroring behaviors influenced food choice at mealtime among participants, and based on this research, university administrators and health practitioners should create and implement programs to make fruit and vegetable consumption – as key components to a healthy lifestyle – seem "cool." Programs could be implemented that reward freshman for fruit and vegetable purchases with free clothing and university-branded promotional items, and university-sponsored clubs and groups could stop using unhealthy foods – like pizza parties or ice cream socials – as attendance incentives, and instead devise non-food-related ways to incentivize participation.

4.2 Future Research

The perceptions related to fruit and vegetable consumption identified in this study represent emergent themes and subthemes that need to be validated. Of particular importance is integrating these findings with recent research that has explored healthy eating habits among college students in other countries. Cooke and Papadaki (2014) found that UK university students lack sufficient nutritional knowledge to improve dietary quality. To inform educational program development, future research should explore how to improve nutritional education for consumers at various levels of educational attainment and background.

Additionally, research is needed regarding evolving social influences among emerging adults, a developmental phase identified by Arnett (2000) and encompassed by participants in this study. Nelson et al. (2008) found a paucity of research regarding the unique characteristics of emerging adulthood and its contribution to long-term, health-related behavioral patterns. While this study adds to the literature, more work needs to be done to help understand habit-forming and eating behaviors that develop during this crucial developmental stage.

4.3 Limitations

There are some limitations to this study. First, as previously mentioned, the goal here was not to achieve generalizability but to understand the lived experiences of participants. Our aim is that themes and subthemes identified from the transcripts shed light on how internal and external factors serve as barriers to fruit and vegetable consumption, but this paper is only able to speak about college freshman living on campus at one Mississippi university. While college freshman are an important group for analysis, as individuals of this age begin making eating decisions that shape future habits and health behaviors, future research should provide more representative samples to draw conclusions in a generalized fashion about these findings. Other researchers have noted that some individuals begin making eating decisions well before college and continue refining their eating habits well after. Additionally, while Mississippians' perceptions of barriers to fruit and vegetable consumption are fertile ground for study due to the various health crises currently facing the state, future research should provide more representative samples from residents across the nation to draw stronger conclusions and foster more robust findings. Keeping these limitations in mind, we believe this paper has provided new avenues for inquiry by listening to young adults residing in a state facing some of the country's most acute health challenges.

5. Conclusion

Establishing healthy eating habits, of which fruit and vegetable consumption play a major role, often leads to better health outcomes later in life. Increased fruit and vegetable consumption helps prevent a host of diseases and maladies and directly addresses the obesity epidemic in America. Because many college freshmen are making dietary decisions on their own for the first time, university administrators, foodservice representatives, and health practitioners should target this group for education and intervention. Social influences, however, are much more difficult to change. This study adds to a growing body of literature regarding eating behaviors among college students in a particularly meaningful way – by focusing on students who live and eat on campus and thus have more limited food options, our results call for a renewed interest in the role university administrators and the foodservice companies they partner with should play in emphasizing student health.

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