

Perceived Barriers and Facilitators to Healthy Eating and School Lunch Meals among Adolescents: A Qualitative Study

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Objectives: We explored how perceived barriers and facilitators influence healthy eating and investigated the acceptability of changes to school lunch meals among adolescents after implementation of the Healthy, Hunger-Free Kids Act of 2010. **Methods:** We conducted 8 focus groups with adolescents (N = 64) at 3 South Los Angeles high schools. Data collection instruments included a semi-structured guide and questionnaire. Two researchers independently coded transcripts. **Results:** Most participants believed fruits and vegetables were available in their community and reported high relative cost, poor quality, and lack of motivation as barriers to consumption. Many said school meals were an important source of healthy food and were aware of recent changes to the school lunch

program. A primary facilitator to eating school lunches was access to fresh food items (eg, a salad bar). Perceived barriers included long cafeteria lines, time constraints, lack of variety, and limited quantities of preferred items. Adolescents viewed off-campus food establishments near the school as competition to school meals. **Conclusions:** Our findings suggest the need to measure perceived and actual barriers to healthy eating among adolescents and to examine the effect of these barriers on dietary behavior. We provide programmatic and policy recommendations.

Key words: adolescent health; school health; healthy eating; school meals; qualitative research

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Reducing adolescent obesity is a public health priority in the United States (US) because one in 5 adolescents (12 to 19 years) is obese,^{1,2} and obesity is related to serious health risks.³⁻⁵ Racial/ethnic obesity disparities are pervasive, and African-American and Hispanic adolescents have disproportionately higher rates than Whites.^{2,6-9} Dietary guidelines recommend adolescents consume 1-1/2 – 2 cups of fruit and 2 –2-1/2 cups of vegetables per day to protect against weight gain and many chronic diseases.^{10,11} However, dietary

disparities exist between racial/ethnic groups and Hispanic and non-Hispanic black adolescents have significantly greater odds of not meeting the recommendation compared with non-Hispanic white adolescents.⁶ Promoting healthy eating behaviors in these groups may help reduce existing disparities and improve health outcomes.

Schools are well-positioned to implement obesity prevention and reduction interventions¹²⁻¹⁵ because they are important ecological niches that influence adolescent dietary behavior.¹⁴⁻¹⁶ Prior studies reveal key factors for food choices among adolescents are hunger, food cravings, food appeal, food availability (including fast food availability near schools), time, convenience, and parental role modeling and support.¹⁷⁻²³ In school settings, other influential factors include time constraints and the availability of fruits and vegetables.²⁴

School meals are an important component of the school food environment.²⁵ Changes to school meals, such as the Healthy, Hunger-Free Kids Act

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of 2010 (HHFKA), warrants additional research on the acceptability and feasibility of these changes. The HHFKA reauthorized funding for child nutrition and school meal programs and included several program and policy provisions, including an authorization to update nutrition standards for school meals.²⁶ To date, it has been shown to increase the nutritional quality of school meals^{24,27,28} and increase students' access to healthy food in high schools.²⁹ Additional research on healthy eating at school is needed with high school-aged adolescents²⁵ and in low-income communities.³⁰

Research on adolescents' perceived barriers to healthy eating can help to inform the development of effective and appropriate program and policy interventions.^{31,32} The purpose of this qualitative study is to explore perceived barriers and facilitators to healthy eating (ie, consuming fruits, vegetables, and school lunch meals) among high school-aged African-American and Hispanic adolescents as well as their awareness and acceptability of HHFKA changes. A qualitative research design was appropriate for this study given the exploratory nature of the research questions and the lack of existing data on these topics for high school-aged adolescents. To our knowledge, this is the first study to explore adolescents' perceived barriers and facilitators to school lunch meals in a traditional public school setting after implementation of updated nutrition standards for school lunch meals.

METHODS

Study Design and Population

This qualitative study consisted of focus groups conducted during the academic school year (2014-2015). Eligible participants were high school students attending one of 3 large traditional public high schools in South Los Angeles, California. South Los Angeles was selected for this study because residents have high obesity and overweight prevalence rates. An estimated 38.9% of adults are obese and 46% of adolescents, ages 12-17 years, are either overweight or obese (BMI \geq 85th percentile).^{33,34} The 3 high schools were selected because each is considered a high poverty school using the USDA's identified student percentage (ISP) definition (ie, at least 40% of the student population is eligible for free school meals because they are directly certified through eligibility in certain federal assistance programs or belong to a vulnerable population category such as homeless or foster children). Moreover, all 3 schools implemented HHFKA healthy food guidelines prior to data collection and had closed campus rules (ie, students are not allowed to leave the school campus during lunch).

We employed a convenience sampling strategy to recruit high school students. Inasmuch as recruitment has been identified as a challenge in focus group research,³⁵ we used a multi-pronged recruitment approach that included direct advertising (eg, flyers) and collaborating with school staff. We asked school staff to invite high school boys

and girls from different grade levels to participate. School staff made announcements in classrooms and distributed parental consent forms. They asked students to return these forms to a designated school liaison. We scheduled focus groups at each school after 8-10 students returned completed consent forms, and we anticipated a 15%-20% no-show rate.

Data Collection

Data collection instruments included a semi-structured focus group guide (with open-ended questions on key healthy eating themes) and a questionnaire. The research team drafted focus group questions based on prior experience, the research questions, and existing studies. A community-based organization in South Los Angeles and a community advisory board provided input before we finalized the instruments.

After providing verbal assent, adolescents self-administered a questionnaire to collect data on the following topics: sociodemographic characteristics, nutrition, physical activity, and height/weight. The questionnaire was completed before the group discussion to avoid bias. Weight categories were calculated for each participant using self-reported sex, age, height, and weight data.³⁶ At the beginning of each discussion, the moderator asked an icebreaker question (How would you describe a healthy meal?) to help participants focus on the topic of healthy eating. Focus group questions aimed to elicit data on participants' perceptions, behavior, and experiences related to 4 key healthy eating themes: healthy meals (general), fruits and vegetables, school cafeteria and lunch meals, and off-campus food alternatives. Table 1 lists the focus group questions by theme.

Two experienced moderators facilitated the groups while 2 observers took detailed notes regarding side conversations, body language, and contextual information.^{37,38} Data collectors attended training sessions to review staff responsibilities, role play scripts, and cover key ethical issues and protocol for transferring data to the project manager.^{39,40}

Focus groups were held in high school classrooms to ensure the privacy and comfort of participants. Groups lasted between 60 and 90 minutes and were audio-recorded. Participants received a \$20 gift card and refreshments. Data collectors held a debriefing session lasting between one and 2 hours immediately after each group to review the field notes, key findings, and emergent themes. The research team determined thematic saturation after 6 focus groups were completed and conducted additional groups to balance the number of students across the 3 schools.

Data Analysis

Recordings were transcribed verbatim. The project manager reviewed the transcripts and uploaded them for data analysis with NVivo software.⁴¹

Table 1
Focus Group Themes and Questions

Healthy Eating Themes	Focus Group Questions
Healthy Meals (General)	Where can you get a healthy meal in your community? What kinds of healthy meals are available in your community? What makes it difficult to get a healthy meal in your community?
Fruits and Vegetables	Where does your family usually buy groceries? Which fruits and vegetables does your family usually buy? Do you like them? Why or why not? Why do you eat fruits and vegetables? Why don't you eat more fruits and vegetables?
School Cafeteria and Lunch Meals	Where do you regularly eat lunch on a normal school day? Why? About how often do you eat in your school cafeteria in a week? Why? What types of changes have you noticed in your school cafeteria compared to previous years (if any)? What do you think about these changes? What do you like about your school's cafeteria? [Probe: What kinds of cafeteria foods do you like? Why?] What do you not like about your school's cafeteria? [Probe: What kinds of cafeteria foods do you not like? Why?] Describe ways to improve your school cafeteria and the meals served.
Off-campus Food Alternatives	What kinds of food do you buy outside of your school's campus? If you buy food before or after school, where do you go to buy food? [Probe: Where are these places located?] How close are they to your school?] Why do you buy [mention specific foods mentioned by participants]?

The initial codebook was based on questions in the guide and a literature review on barriers and facilitators to healthy eating among adolescents. A grounded theory approach was used to identify additional emergent themes and sub-themes regarding perceived barriers to healthy eating and school lunch meals during pilot coding because we did not have specific hypotheses about these topics.⁴² Two research assistants pilot-tested the initial codebook to develop a finalized codebook. Two investigators independently coded all transcripts using the codebook.⁴³ The inter-rater reliability kappa coefficient was 0.78, indicating sufficient agreement. Thematic summaries were developed based on the coded content and were reviewed by the principal investigators.

RESULTS

We conducted 8 focus groups across the 3 sites with a total of 64 adolescents (groups ranged from 4 to 11 students). Participants were between 14 to 19 years of age (Mean = 16.3). Most students in the sample were girls (67.2%), although school 3 had a more representative sex distribution. A high percentage of participants identified as Hispanic/Latino (59.4%) or African-American (32.8%). Racial/ethnic composition of the groups varied by school but was like the overall racial/ethnic composition of the student population at each school. Participants from school 1 were mostly African-American (81.3%), whereas participants from school 2 mostly identified as Hispanic/Latino (89.7%). School 3

had a more diverse mix (36.8% African-American and 52.6% Hispanic/Latino). We also asked participants whether they qualified for the free or reduced-price meal program (a proxy for low-income household status) and a high percentage (75%) said they were eligible, although the remainder did not know. Participants weighed an average of 149 pounds (SD = 39; range = 98 to 334). Nearly one-third (N = 18) were overweight or obese based on self-reported height, weight, and age data. Table 2 provides the sociodemographic characteristics of participants by school and overall.

Perceived barriers and facilitators to healthy eating could be described as either environmental or intrapersonal, and included food accessibility, availability, preference, appeal, preparation, source, variety, quality, cost, motivation, time demands/constraints, cafeteria lines, school lunch changes, hunger, off-campus food in different settings (community, school, home, or across settings). Key barriers and facilitators to healthy eating are discussed in detail below.

Healthy Meals, Fruits, and Vegetables: "I don't think about it."

When asked to describe a healthy meal, the most popular answer was "fruits and vegetables" in every group. Most participants perceived fruits and vegetables to be highly available in their community and said they could easily access these items at nearby grocery stores, their home, or their school.

Participants from all 3 schools mentioned a rela-

Table 2
Sociodemographic Characteristics of Focus Group Participants (N = 64), South Los Angeles, California, 2014-2015

Characteristic	School 1 N (%)	School 2 N (%)	School 3 N (%)	Total N (%)
Age (years)				
14-15	6 (37.5)	8 (27.6)	5 (26.3)	19 (29.7)
16	3 (18.8)	6 (20.7)	6 (31.6)	15 (23.4)
17	3 (18.8)	7 (24.1)	5 (26.3)	15 (23.4)
18-19	4 (25)	8 (27.6)	3 (15.8)	15 (23.4)
Sex				
Boys	3 (18.8)	8 (27.6)	10 (52.6)	21 (32.8)
Girls	13 (81.2)	21 (72.4)	9 (47.4)	43 (67.2)
Race/Ethnicity				
African-American	13 (81.3)	1 (3.4)	7 (36.8)	21 (32.8)
Hispanic/Latino	2 (12.5)	26 (89.7)	10 (52.6)	38 (59.4)
White	--	--	1 (5.3)	1 (1.6)
Native Hawaiian/Pacific Islander	1 (6.3)	--	--	1 (1.6)
Multi-ethnic	--	1 (3.4)	1 (5.3)	2 (3.1)
Did not answer	--	1 (3.4)	--	1 (1.6)
Language Spoken at Home				
English (Only or Mostly)	14 (87.5)	4 (13.8)	9 (47.4)	27 (42.2)
Both English and Spanish	2 (12.5)	23 (79.3)	10 (52.6)	35 (54.7)
Spanish (Only or Mostly)	--	2 (6.9)	--	2 (3.1)
Free or Reduced-price Meal Eligibility				
Yes	13 (81.3)	20 (69)	15 (78.9)	48 (75)
Don't Know	3 (18.7)	9 (31)	4 (21.1)	16 (25)

tive cost barrier, namely that healthy items like fruits and vegetables were more expensive compared to less healthy items in their neighborhood. Several also expressed a perceived inequality in terms of the quality of items available in their neighborhood compared to more affluent nearby neighborhoods. A participant from school 1 said:

"I go far away to get the good quality food, like Santa Monica."

Some believed higher quality healthy food items and stores were only available in distant communities. A participant from school 3 said:

"When my mom wants to buy organic food, we drive all the way to Trader Joe's. It's far."

Most participants cited their home environment as an important source of healthy food, such as fruits and vegetables. Apples and bananas were the most commonly available fruits at home. Participants said they did not like eating vegetables and

noted the importance of having appealing healthy food items readily available when they were hungry. A participant described how food consumption at home was heavily influenced by parents' choices and the availability of food items: "We're just used to grabbing what our parents buy us." A few said they only ate fruit as a snack when junk food was not available.

A key emergent perceived barrier to consuming fruits and vegetables (in any setting) was an intrapersonal factor, namely lack of motivation. About one-third of participants said they did not consume more fruits and vegetables because they did not think about it. Several mentioned that they did not actively prioritize healthy eating behaviors, as illustrated by the following quote in response to the question about reasons for not eating more fruits and vegetables: "I don't think about it." Instead, participants said they usually ate what was easily accessible and appealing when they were hungry. Other noted perceived barriers to fruit and vegetable consumption included taste preferences (eg, "Yeah, cauliflower is nasty") and overripe/poor

quality fruit (eg, “Yeah, sometimes the bananas brown too fast”).

**School Cafeteria and Lunch Meals:
“The salads are all right. Sometimes they run out though.”**

Most participants said school lunch meals were a key source of healthy food and regularly offered fruits and vegetables in their community. Several participants spoke about recent improvements to the school cafeteria food, mentioning an increase in healthy items. Some positively remarked that more options were available compared to previous years, such as a participant from school 3 who said: “They have more options this year like salads and sandwiches.” Many expressed positive sentiments about changes to school lunch meals and the impact on dietary consumption, as illustrated by the following quote: “The school changed the menu and it’s gotten better since last year...everyone’s eating healthier than last year.” According to participants, other healthy food sources at school beside school lunch meals were school breakfast meals and afterschool program snacks.

About 3 out of 5 participants said they regularly ate school lunch meals. Others said they usually purchased food from a school vending machine/snack cart or skipped lunch altogether. A key perceived barrier to school lunch meals consisted of long cafeteria lines. Many expressed disdain for long cafeteria lines, describing the process as “slow” and said entry rules requiring a pin number added time, particularly when their peers did not recall their pin. A participant from school 1 described factors contributing to long cafeteria lines: “It’s slow. A lot of kids in line. So many kids don’t know their numbers to the thing so it goes slow.” Participants from all groups said it was a common occurrence for students to “rush to get their food” after the bell and for students to “cut the line” to the school cafeteria during lunch. The latter phenomenon occasionally resulted in an argument or a fight. Most of those who ate school lunch meals cited time constraints as an issue further limiting intake, because if a student could pick up a school lunch, “you don’t have time to eat.”

Other barriers to consuming school lunch meals were intrapersonal and centered on the type and quality of food items. Participants from all the groups said some food items lacked flavor or appeared unappetizing. The word “nasty” was used by many to describe specific items and a lack of variety was identified as problematic. Several participants shared that they generally disliked items that appeared to be previously frozen or food that “looks reheated, it’s not fresh.” A few participants expressed a preference for food that was recently cooked instead of being reheated. One participant from school 2 mentioned the importance they placed on having cafeteria staff prepare food from scratch instead of heating up previously prepared food:

“They don’t even cook it. They just heat it up. If they would cook it. Like in the movies...yes, it would be bomb. Like they make mashed potatoes. Some corn, some green beans. We need some of that.”

Lack of variety was another noted barrier to consumption. Some participants felt like the menu did not vary, saying: “it’s like the same meal every week.” Another participant said the lack of variety was a challenge because “they don’t have that many options.”

Conversely, the availability of “fresh” food items was a key facilitator to healthy eating in the school cafeteria. Most said they enjoyed lunch items that appeared fresh like premade salads and specific fruit items (eg, oranges and bananas). Participants said they liked new lunch items that had been introduced recently, such as the salad bar, because they appeared fresh and offered variety. Some expressed frustration when only limited quantities of these items were available:

“The only thing I really like in the cafeteria is the little chef salad with croutons in it, and they always run out of those. And that’s the only thing I like. They always run out, they be like ‘sorry there’s no more.’”

Participants recommended increasing the quantity of popular cafeteria food items to address the limited supply issue.

**Off-campus Food Alternatives:
“There’s at least 2 liquor stores and like maybe 5 fast food places in one lot.”**

Most participants said they preferred off-campus food to school lunch meals due to the variety of options offered and food appeal. A participant from school 1 expressed this preference:

“People here would rather put their money together to order pizza than eat the cafeteria food.”

Several participants said they regularly purchased food off-campus either before or after school. Those who regularly skipped lunch reported purchasing fast food and junk food items from nearby restaurants and convenience stores after school when they were hungry due to the variety of options. In the words of one participant:

“[Off-campus food establishments] have more variety too. Like it’s not just that. More to choose from than just what they give you.”

Participants from all the schools said a high quantity of less healthy food options were available in the community. Several said it was convenient to frequent restaurants and fast-food chains after school since “a lot” of these establishments were

located within walking distance. They mentioned specific liquor stores, corner stores, coffee and donut chains, and sit-down restaurants as popular establishments frequented by students. Popular junk food items from liquor and corner stores included chips, soda, energy drinks, and blended caffeinated drinks. A few adolescents from a group in school 1 commented that less healthy food establishments were intentionally located near the school to attract students (eg, "They made the 7-Eleven® for the students. They was [sic] thinking about us.") and said it was difficult to avoid these places or to choose healthy food items when unhealthy options were so readily available.

DISCUSSION

This qualitative study identifies important barriers and facilitators to healthy eating among low-income African-American and Latino adolescents. We found that most participants believe fruits and vegetables are generally available, suggesting that access to fruits and vegetables is not a key barrier to healthy eating in this community. The perceived inequality between the quality of items in their neighborhood and more affluent neighborhoods may potentially influence dietary behavior if adolescents believe the healthy food they can locally access is of lower quality, and therefore, is less desirable (coupled with being more costly than unhealthy items). Increasing awareness of alternative non-brick and mortar food sources (eg, local farmers' markets and school gardens) and their associated benefits may help to improve this perceived quality gap and the cost barrier.

Because a lack of motivation was a key perceived barrier to fruit and vegetable intake, future studies should explore psychosocial barriers in a more in-depth way as well as their impact on consumption among high school-aged adolescents. According to self-determination theory, individuals can be motivated by external factors (referred to as controlled motivation) or internal reasons such as personal choice, interest, or value (autonomous motivation) to engage in specific health behaviors.^{44,45} Further exploration on the effect of autonomous motivation on healthy eating behavior is needed for high-school aged adolescents. Interventions to promote autonomous motivation to eat healthy food, such as motivational interviewing strategies,^{44,46} may be effective toward addressing dietary disparities among minority adolescents. Behavioral economic approaches also may help to promote healthy eating among adolescents because they modify the physical environment to make the healthier choice more convenient (eg, a cafeteria convenience line with only healthy food options) and appealing to increase intake of healthy food.⁴⁷⁻⁴⁹ Additional intervention research is needed to identify the efficacy of behavioral economic strategies to improve dietary choices among high school-aged youth in low-income communities; most prior work has focused on younger children.

Most participants identified school lunch meals as an important source of healthy food in the community. It is promising that participants from all 3 schools expressed awareness of recent improvements to school lunches and expressed satisfaction with certain food items. The salad bar, pre-made salads, and certain fruits were particularly highlighted as popular food items, and participants expressed frustration when these items were only available in limited quantities. Our results are like those from another qualitative study conducted at a public charter high school where students, parents, and staff said they appreciated the freshness of the school lunch food after implementation of a pilot nutrition program.¹⁷

The finding that time constraints act as a barrier to healthy eating is also consistent with other qualitative studies that similarly identified it as an important variable influencing adolescent food choices.^{19,20} Unlike previous studies, however, we specifically identified long cafeteria lines as a key barrier inhibiting access and intake of school lunch meals. The emergence of lunch cafeteria lines as a barrier among adolescents from 3 different schools suggests this barrier is important and needs to be addressed to increase lunch consumption. A possible solution is to extend the lunch period, which has been found to increase odds of eating fruits and vegetables at school.⁵⁰ If extending the school lunch period is not feasible, institutional and policy strategies may be of use. For instance, the Community Eligibility Provision (CEP) is a component of HRFKA implemented nationwide in 2014-2015 that allows high poverty schools to serve breakfast and lunch to students at no cost.^{51,52} At the time of the study, none of the schools in the study were enrolled in CEP. CEP's goal is to reduce administrative barriers to school meal program participation in high-poverty schools by eliminating the collection of meal eligibility applications and increasing school lunch participation rates. An additional potential benefit of CEP is reduced cafeteria lines because school staff do not have to collect meal payments and students do not have entry rules requiring a pin or access card;⁵¹ however, this potential benefit has not been systematically measured.

Barriers to school lunch consumption we identified in this study are not currently included in population-based adolescent surveys that provide food and beverage intake and school food environment data. Survey questions asking adolescents about the availability of on-campus food access points (eg, cafeteria, snack carts, etc.) and potential cafeteria entry barriers (eg, cafeteria line times) are needed in population-based surveys. Pilot-testing and integrating these items into existing health surveys may yield valuable information, including whether school lunch access disparities exist across schools, districts, or communities or even if policies, such as CEP, are helping to alleviate access barriers. Because the school food envi-

ronment is changing rapidly,²⁵ tracking these measures longitudinally is important for comparison.

Our study underscores the importance of accounting for the local food retail environment when studying adolescent dietary behaviors at school. Several participants reported regularly skipping lunch and purchasing food from off-campus food retailers. Similar to findings from other studies, retailers and other options located off-campus with less healthy foods are difficult for students to ignore,¹⁷⁻¹⁹ in part, due to adolescents' personal taste preferences for fast food that can have enjoyable connotations and be associated with social peer networks.³² It is important for practitioners and researchers to recognize that nearby fast food chains, sit-down restaurants, convenience stores, and, in some cases, mobile food vendors compete with school lunch meals. Qualitative research with community stakeholders in 2 low-income Massachusetts communities suggests increased communication and collaboration among community stakeholders engaged in childhood obesity prevention can enhance current obesity prevention efforts.⁵³ Multilevel intervention studies and advocacy initiatives also may help address the perceived abundance of less healthy food in underserved communities.

This study has several limitations. The findings are restricted to the convenience sample and are not generalizable to the school population. Because the sample is predominantly adolescent girls, we underreport the perspective and experiences of adolescent boys. Self-reported survey data are also subject to bias. Moreover, we did not collect data on interpersonal factors that influence dietary behavior (ie, peer influences or parental effect)^{14,19,54} which are important influential factors for adolescent populations, but were not the focus of our study.

Despite these limitations, a main strength of this study is the inclusion and recruitment of low-income African-American and Hispanic adolescents from 3 high schools. Most studies generally focus on younger children (elementary and middle-school), and high school students are less represented. Understanding barriers and facilitators to healthy eating in an economically distressed urban community is important toward developing effective programmatic or policy interventions to promote healthy dietary behaviors among adolescents and to enhance current policy initiatives, such as the HHKFA. Future research is needed to measure the impact of the barriers identified in this study.

Human Subjects Statement

We obtained written parental consent and verbal assent from all participants before their participation in the study. Verbal consent was witnessed and formally recorded. The University of Southern California's Office for the Protection of Research Subjects approved all procedures involving human subjects.

Conflict of Interest Statement

All authors declare no conflict of interest.

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