

RESEARCH ARTICLE

High School Students' Recommendations to Improve School Food Environments: Insights From a Critical Stakeholder Group

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ABSTRACT

BACKGROUND: The Healthy, Hunger-Free Kids Act of 2010 (HHFKA) directed the US Department of Agriculture (USDA) to revise school meal standards. Students are most affected by efforts to improve the school food environment; yet, few studies directly include students. This study examined high school students' experiences of school meal reform to gain insight into implementation recommendations.

METHODS: We conducted 5 focus groups with high school students (N = 15) from high schools across 9 states. We also conducted follow-up interviews to further explore personal experiences. Focus groups and interview transcripts were coded and organized in Atlas.ti v7 by analysts, following principles of constant comparative analysis.

RESULTS: Students reported overall positive perceptions of the revised school meal standards and supported continued efforts to improve the food environment. Recommendations to improve the food environment included engaging students, focusing on the quality and palatability of meal items, moving toward scratch-cooking, and addressing cafeteria infrastructure.

CONCLUSIONS: Students' recommendations point to opportunities where school districts, as well as local, state, and federal organizations can work to improve the school food environment. Their insights are directly relevant to USDA's recently released Local School Wellness Policy final rule, of which school meal standards are one provision.

Keywords: child and adolescent health; nutrition and diet; policy; school food services.

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Serving over 30.5 million children and adolescents daily, the National School Lunch Program (NSLP) offers an opportunity for improving nutritional intake along with having a population-level impact on health.^{1,2} Given the important role that nutrition plays in students' health, well-being, and academic performance,³ as well as the ongoing evidence that

adolescents in the United States have less than optimal diets,^{4,5} school food environments remain a key target site for adolescent health professional advocates.² The federal government responded to this opportunity with reforms to the school meal program, Nutrition Standards in the National School Lunch and Breakfast Programs⁶ (hereafter referred to as revised school meal

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standards). These standards went into effect for the 2012-2013 school year and required increased healthy offerings in the form of fruits and vegetables, whole-grain rich products, and limits on sodium, trans and saturated fats, as well as age-appropriate calorie ranges.

Despite the public controversy about school meals, studies have documented that students are increasingly accepting of the changes and there is emerging evidence of the positive impacts to students' dietary intakes.⁷⁻⁹ However, studies have also reported that secondary schools have traditionally had food environments that were worse than elementary schools and have also lagged in the implementation of these standards.^{10,11} These trends are concerning since the federal initiatives aimed to ensure that *all* students have access to health promoting environments.

Further, while studies about the revised school meal standards have assessed a range of outcomes, such as measures of plate waste^{8,12,13} and school professionals' perceived reactions to the standards^{7,14,15} only a handful of studies have directly examined high school students as key stakeholders in the implementation of revised school meal standards. Arguably, students are most affected by efforts to improve the school food environment; yet, few studies have directly included students in research despite the potential for improved outcomes and greater engagement.^{16,17} To our knowledge, the studies that have examined school meal implementation since 2012-2013 are limited to students from only a few school districts. One study in Texas examined middle school students' perceptions of the revised meal standards and noted that those attending schools with higher free and reduced-price lunch (FRPL) eligibility reported less satisfaction with meals and that older students had a harder time adjusting than their younger peers.¹⁸ Another study from Massachusetts noted that high school students disliked smaller portion sizes and the taste of the meal changes, but also liked the salad bars and other new fresh items.¹⁹ Last, a community-based participatory research (CBPR) study in California with low-income middle school students initially noted dislike of reforms to the school meal program but improvements to facilitate changes to the school food environment after working with the food service team.¹⁶

In light of the few studies to date on student experiences with the revised school meal standards, more information is needed to understand how this stakeholder group has experienced reforms. Such evidence could inform how those providing support to school districts and schools could better understand and facilitate the sustainability of the revised meal standards changes. Moreover, qualitative approaches can provide unique student insights into the processes and nuances of the local school reform implementation experience. In response to these gaps, the objectives of this study were to: (1) understand the experiences and

perceptions of high school students after the revised school meal standards; and (2) describe students' recommendations for improving the school food environment.

METHODS

The current study is one phase of the National Wellness Policy Study (NWPS),²⁰ a mixed methods study that examines policy implementation and impacts of the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) policies. The NWPS includes qualitative studies of key stakeholders' experiences during implementation of school wellness and nutrition policies, with the intention of informing best practices.

Participants

We conducted 5 focus groups with high school students ($N = 15$) during the Youth for Healthy Schools conference convened by the Funders' Collaborative on Youth Organizing (FCYO) in Los Angeles, California in July 2015. FCYO is a nonprofit, social justice organization that strives to boost youth capacity for civic organizing and advocacy in several domains, including health and wellness.²¹ This conference brought together high school students from local organizations located in 9 states to discuss school food and nutrition reform. Students had engaged with their local organizations and FCYO to varying degrees; overall, students had higher levels of knowledge and engagement with school nutrition issues than the "typical" high school student. Prior to the conference, we recruited students via an electronic mail message sent from the FCYO Director who disseminated study information to students' respective local organizations. Interested students were asked to bring assent forms and signed parent consent forms to the meeting. After the focus groups, the FCYO Director emailed a second invitation letter to the original 15 students to participate in follow-up interviews. From September to December 2015, we collected a second round of consent and assent forms from students who agreed to participate in telephone interviews.

Instrumentation

A focus group guide and the semistructured interview guide were developed from existing instruments in the literature and iteratively revised by the study team.²²⁻²⁴ The focus group guide asked open-ended questions about students' experiences and perceptions of revised school meal standards and the cafeteria environment. We pilot-tested the focus group guide with a group of 8 high school students who were members of their local Young Men's Christian Association (YMCA) for clarity, flow, and terminology. Pilot focus groups were conducted in Connecticut by a member

of the research team; data were used to inform the instruments but not included in the final sample. The semistructured interview guide asked personal details about experiences with the school meal program; questions about media and school meal reform (how have you seen school meals represented in the media?); and students' involvement with school food projects with their respective organizations. The semistructured guide was not pilot tested due to time constraints. Both guides are available upon request to the corresponding author. To analyze the focus group data, we developed a preliminary coding guide from the interview guide and research questions. This coding guide was later revised to analyze the follow-up interview transcripts.

Procedure

Focus groups were conducted by a lead moderator and a room assistant and lasted ~60 minutes; follow-up semistructured interviews were conducted by phone and lasted between 30 and 60 minutes. The room assistant took notes during both focus groups and interviews, as well as after each post-focus group and post-interview debriefing session.²⁵ During debriefings, we discussed general observations about the students' discussions, surprising comments, and notes on how to improve the data collection process.²⁶ A research assistant transcribed audio files verbatim.

Data Analysis

Focus group and interview transcripts were reviewed for errors and uploaded into Atlas.ti Qualitative Data Analysis & Research Software (v7) for organization and team coding.²⁶ Coding allowed for large quantities of data to be categorized into chunks of text that are represented by symbolic constructs (codes) for efficient exploration.²⁷ Revisions included creating new codes and refining existing ones as they emerged. For each set of transcripts, 2 analysts independently read through and open-coded 1 transcript using the coding guide. We used memos to document emergent codes, theme generation, and additional questions that were posed at the next meeting. Weekly meetings were held to discuss memos and discrepancies between applications of codes; this process led to further refinement of the coding guide and initial understandings of emergent themes. Following principles of constant comparative analysis,²⁸ our process involved continuous meetings to identify thematic patterns between focus group and follow-up interview themes; these findings were shared with the research team intermittently for questions and clarification. Last, we invited all 15 students to review a preliminary findings document and participate in a "member checking"²⁶ group discussion call to provide feedback. Ten students joined the call and provided clarification

to the themes. The main goal of the call was to ensure that students' voices were accurately captured in the findings. Revisions were made to the themes following the "member checking" call. The ongoing processes of comparing themes between and across focus groups, interviews, and searching for alternative explanations and themes before and after the member checking call confirmed thematic saturation was achieved.²⁸

RESULTS

A total of 15 students participated in the focus groups and 9 students participated in the follow-up interviews. Table 1 lists the characteristics of high schools attended by students: the majority of schools was urban, high free and reduced-price eligible, Hispanic, and located in the western United States.

Overall, students in this unique sample asserted the importance and value of the NSLP and supported the HHFKA and the resulting revised school meal standards. However, students also pointed to the need for ongoing changes to school food environments, as well as ways in which implementation processes of the revised standards could be improved. The themes are presented as recommendations—drawing from students' experiences—for future implementation efforts to improve the school food environment. Recommendations may be relevant for schools in predominantly urban and underserved school communities. Themes and additional illustrative quotes are presented in Table 2.

Continue to Advance School Meal Reform Efforts

While students reported several areas for improvement in the implementation of the revised meal standards (discussed below), overall, they expressed appreciation for federal initiatives that were "shining a light" on the need to improve the school food and health environments broadly.

A lot of kids are not getting the necessary nutrients that they need and by Michelle Obama talking about the importance of eating healthier, exercising, and just being physically active, I feel like a lot of students are . . . trying to be healthier.

Further, students perceived that in general, they and other students are eating more fruits and vegetables as a result of the standards with a particular appreciation for the addition of fruit. Students expressed a desire for more options of fruit and vegetables and several brought up their desire for salad bars (compared with prepackaged salads) as one strategy that would provide more desirable options.

In light of these overall positive views, students noted that their support for healthier meal standards was not accurately portrayed in the popular media and within their communities. Students in this study

Table 1. Characteristics of High Schools Where Students Were Enrolled

	N (%)
Locale*	
Suburb	6 (40)
Urban	9 (60)
Rural and town	0 (0)
Free and reduced-price lunch eligibility (tertiles)*	
Low (<41.20%)	0 (0)
Middle (≥41.20%, <72.53%)	5 (33)
High (≥72.53%)	10 (67)
School size (tertiles)*	
Small (<265)	0 (0)
Medium (265-528)	8 (53)
Large (≥529)	7 (47)
Majority race/ethnicity*	
Majority white (≥50% white)	0 (0)
Majority Hispanic (≥50% Hispanic)	12 (80)
Majority black (≥50% black)	2 (13)
Diverse	1 (7)
Region†	
West	10 (67)
Northeast	2 (13)
South	3 (20)
Midwest	0 (0)

*Categories defined by National Center for Education Statistics Common Core of Data (CCD) 2013-2014. National Center for Education Statistics. Common Core of Data (CCD) 2013-2014. <https://nces.ed.gov/ccd/> Accessed September 1, 2015.

†Defined by U.S. Census Bureau regions. United States Census Bureau. Regions and Divisions; 2016. <https://www.census.gov/geo/reference/webatlas/regions.html>. Accessed September 1, 2015.

felt inaccurately perceived as “*young people* [who] *don’t want to eat healthy foods,*” or that they were demanding the return of the “*old food*” prior to the revised standards. In fact, students supported efforts toward improving the health of school environments and advocated for schools to learn from other environments that provide healthy and tasty snacks. One student provided an example from her after-school club:

They’ve [after-school club] been feeding us healthy stuff, and it’s actually good! I’ll think to myself, ‘What? They should serve this at school.’ Cause it was healthy, but it was also good.

Finally, students asserted the importance of supporting ongoing school meal reform efforts because this safety net program played a critical role in their school communities. Several students shared their concerns about hunger and food security among peers, highlighting why successful implementation of the revised school meal standards was important for their communities:

Well, in my community, there’s a lot of poverty . . . at least more than 50% of the people around my community depend on food stamps to get food . . . and I feel like that’s not really enough so we depend on school meals to eat those fruits and vegetables that we need to grow up.

Communicate the Importance and Intentions of School Meal Reform

Most students noted that school meal changes were initially poorly received at their respective schools; however, they felt these reactions were, in part, due to the sudden changes:

I don’t think it was ever explained to us. I think it was mostly like, forced: “You have to take the milk. You have to take fruits and that’s kind of like how we all learned . . . we were never like, really taught . . .

Students noted that school meal reform was not coupled with efforts to proactively communicate the intentions of the policy. As reported by one student: “*people would be more likely to eat*” if they knew “*it [healthier food] does this to your body and it does this to your brain.*” Further, students noted that informal and formal nutrition education around the importance of healthy eating was also lacking and would have enhanced the changes seen in their cafeterias. To continue to generate support around school meal reform, students recognized the need to communicate and reframe misperceptions about their acceptance:

Instead of saying how bad the food is or how students don’t want to eat healthy, they should really show statistics that show, for example, in the past year these students have lowered their health risk in diabetes or high blood pressure because of the Healthy, Hunger-Free Kids Act.

Students recommended that communications of all types would improve other students’ understanding of changes observed in cafeterias. Some strategies included direct communications through school assemblies to discuss the intentions of school meal reform: “*Maybe have assemblies in the school to explain the importance of it - like why the benefits are good for you,*” while others commented on nutrition education to improve long-term knowledge and student health:

I think they [schools] should, especially implement it [nutrition education] when they’re [students] young so you can grow . . . I think if you get classes over time, by the time you graduate or you’re done, you’re gonna be a very changed person.

Engage Students in School Meal Reform Initiatives

Students are directly impacted by the changes in the school food environment and expressed a desire for their voices—as a key stakeholder in the school community—to be included in school meal reform efforts:

I feel like if they’re interviewing people it should be the students, it should be the teachers that talk to the students, the community, the parents of the

Table 2. Themes and Illustrative Quotes

Theme	Illustrative Quote
Continue to advance school meal reform efforts	<p><i>One thing I've learned with the feedback with this thing [school meal reform] is that people assume that the youth like the old food . . . it really wasn't any better honestly. It's not like people were like, 'oh bring back our old food.' It's not anything like that.</i></p> <p><i>I think most of us are trying to change our ways into eating different . . . across the street from our school they have a place where they sell healthy food and everyone from my school hangs out there after school and will eat there and do homework. So, students do want to eat healthy food. Instead of going to Jack-in-the-box, we all run over there.</i></p> <p><i>'Cause I've met a lot of students that that would be the only meal that they had. Sometimes, they're low income families where I live, so there is food banks, but that was one of the biggest meals that they would have, then if they don't get it at school, they don't get that either, and it's sad. It's an issue, too.</i></p>
Communicate the importance and intentions of school meals	<p><i>I feel like it [school meal changes] would be more strong if they let us know like "hey, we're going to change this food because it does this to your body and it does this to your brain and when you're here for 7 hours or more . . ." It would help students connect . . . and more students would act positively to the change, instead of just passing it [the standards] and not knowing why.</i></p> <p><i>Especially if it's explained like how it was to me, that it's not only affecting your mentality and your mood, but when you're in school, especially, how your grades and your learning gets affected. If it's explained like that, together, it will get more people's attention, it would be understood more and it would get a stronger reaction from people because I had not reacted to it until I got it explained like that.</i></p>
Engage students in school meal reform initiatives	<p><i>We've met with them [Food Service Manager] like 2 or 3 times and one of the times we met with them, we had a taste testing where it was food that could be part of the school lunches, so we had a taste testing and she asked me and the other youth in our organization what we would like and what we think would be better? We told her about them and she told us what things she could do and what things she couldn't do . . . she tried to make as many changes as she could. Like, we told her about the spice rack and we ended up getting seasonings in our school.</i></p>
The "next step": focus on quality and presentation	<p><i>Maybe they [media] should go around interviewing students at school, like, why don't you like your school meal? Because I guarantee a lot of students are going to say it's the taste, it's the quality; they're not gonna say it's because they have to eat vegetables or they have to eat fruits. They're gonna say it's the quality.</i></p> <p><i>They [news outlet] would show Michelle Obama promoting healthy school foods and then they show a school meal and it looks like someone actually took the time and actually worked to cook something, but then if you walk into our schools, you would see soggy chicken nuggets or overcooked fries, or you would smell burnt Sloppy Joe meat.</i></p> <p><i>I think if the food our parents cooked, like if our school lunches looked like those, people would want to eat them because they look good so they would actually want to try them and taste them and eat it.</i></p>
Improve cafeteria infrastructure and mealtimes	<p><i>One thing that really upset everyone is literally salads were gone by second lunch. Um, if you have fourth lunch, you only had pizza or frozen peaches as an option for fruit. It seemed like first lunch got all the privilege.</i></p> <p><i>Also they didn't accommodate time to eat more grainy foods if that makes sense. Like, you know, it's quicker to eat a pizza than to eat rice and, like, chicken, and some people were eating it more than before, and they didn't account time for it, so a lot of times, people didn't finish their food.</i></p>

students seeing them come home hungry . . . go to the ones that can tell you without having to make the research because the research is their lives, like what's going on with them. They don't have to look it up, they're living it every day. There's no better resource than those people.

Whereas this was a unique group of students already engaged in a range of nutrition advocacy activities, students reported that efforts to engage the larger student body would facilitate implementation of changes to the school meals. One student provided an example of taste testing of menu items in the cafeteria, an activity that led to open discussions with his/her school's Child Nutrition staff about feasible steps toward school meal changes that students preferred.

"The Next Step"—Address Quality and Palatability

One of the most consistent themes around the students' advocacy was a demand for better quality and palatability of meals. Students explained that the revised school meal standards were a great start to improving the school food environment yet implementation had not yet addressed existing issues with quality and palatability in their schools. As one student described, his cafeteria implemented the standards and he sees the "the next step" as food quality:

'Cause they should not just give grains just to say, "Oh, we're giving them grains and milk," but now the next step is think of a grain that can be eaten that is good and milk that is not spoiled, fruit that is not bruised like the apples.

It is important to emphasize that—according to students—this issue is often conflated in popular media with resistance to the revised meal standards; however, such student concerns existed *before* the standards. The main reasons for the poor perceived taste and presentation were 2-fold. First, items were perceived as heavily processed and reheated/microwaved that resulted in an undesirable product. Second, as the student above described, the majority of students provided both personal and secondhand accounts of rotten, unripe, moldy fruits and vegetables, undercooked meats, and spoiled milk. A few students connected the quality of their school meals to broader issues with funding of their school nutrition programs. For example, 1 student who had visited a high school in a higher income neighborhood observed:

We get ugly food. Like their [higher-income school] food is still USDA food, but their milk is good. Their fruit is not rotten and they have different kinds of menus.

The students' key recommendation with respect to improving quality was to shift toward scratch-cooked and fresh meal items. Students' recognized that for this to happen, food service departments need the appropriate kitchen equipment.

Like maybe focus on the quality, start making things from scratch instead of heating them, and, the space would be bigger, and maybe more people who would work in the kitchen.

Improve Cafeteria Infrastructure and Mealtimes

For most students, the cafeteria was described as a chaotic environment where students faced crowding, long lines that cut into dining time, and lines that ran out of desirable items. As a result of this environment, students explained that they made daily choices about whether or not they wanted to opt out of participating or look for alternative options, such as vending machines. Some students missed class time to attend a different lunch period because they were not able to obtain a desired entrée during their assigned time. In addition, several students noted that lunch hours were not long enough to both wait in line and consume the meal. One student commented that healthier foods such as whole grain-rich items, take longer to eat and this had not been considered in the recent reform, and thus, students were taking longer to finish meals (Table 2).

DISCUSSION

This study reflected the experiences of a unique group of high school students from urban and low-income communities across the United States. Students were affiliated with a youth advocacy group

and involved to varying degrees in local school nutrition projects, highlighting their special orientation to school meal reform. Students recommended increased communications and opportunities to be engaged in school meal reform, as well as for attention toward the quality of school meals and cafeteria infrastructure.

Despite the students' unique insight into school meal reform, several recommendations offered by this group were consistent with previous qualitative studies involving students. These prior studies highlight the importance of proactive communications and student engagement as strong facilitators for school food policy implementation.^{17,20,27,29,30} In addition, students' comments highlighted the critical importance and challenges of implementing the revised standards in a tasteful and visually appealing manner. While the adoption and implementation of healthier meal standards was a success, the ongoing issues of quality and presentation in these low-income schools remains a concern for this group of high school students. This finding is consistent with a study of public middle school students in New England, who also noted "poor quality and palatability" of the food as a barrier to healthful nutrition at school.³¹ Last, the students' feedback on the need to improve cafeteria infrastructure is consistent with a national study indicating that 86% of schools in the United States needed at least 1 piece of updated equipment and infrastructure to facilitate cooking of healthier meals.³²

At the time of writing, Congress was not able to reach bipartisan agreement for the Child Nutrition Reauthorization Act,³³ a law that includes revised school meal standards. The findings presented here suggest the need for policymakers and the media to shift the focus away from the "politics of food" to solutions that improve the quality and palatability of meals for high schools in low-income communities, many who rely on this important safety net. Rather than a rollback of standards, future steps may be taken to incorporate strategies to facilitate smoother implementation of the standards. Strategies suggested by students include a stronger focus on communications and student engagement, local efforts to improve meal quality, and cafeteria infrastructure.

Limitations

Several limitations to the study are notable. First, this is a unique student group affiliated with a social justice organization. It is likely that the most invested students—even in this already engaged group—would participate in this research study. As a result, students were not representative of the "typical" high school student. However, students' previous engagement with school meals also offered advantages for this study as their experiences allowed for in-depth, insightful recommendations for the issues. Second,

this study was limited in its sample size to those students attending the Healthy Schools meeting in-person. While we did reach saturation across themes and conducted a “member checking” session with the students to ensure proper representation of their experiences, it is possible that additional themes would have evolved if we had recruited a larger number of students. This is a limitation of our sampling; yet, the consistency of our findings with similar studies in the literature suggest that our students’ perspectives aligned with more “typical” student groups. Future research should examine this topic with a larger sample of high school students from a wider range of school communities; for example, rural or higher income schools. Last, this study was limited to focus group and interview methods; future research may take advantage of more participatory research methods that directly involve youth in generating research questions, data collection, and data analysis. While these approaches can be labor and time intensive, there are successful examples in the school food environment literature.^{16,17}

Conclusions

The students we interviewed strongly supported school meal reform and federal efforts to address school meals, noting that the intentions of these policies aligned with their desires and perceived needs for healthier food environments. Students in this study also asserted a critical need for action because school meals serve as an important safety net in their school communities. In addition, students were frustrated that their positive support for school meal reform was not accurately portrayed in popular media. As school meal reform advocates, students offered strategies to facilitate better acceptance to the standards. Importantly, students also reported several ongoing issues, suggesting that the implementation of revised school meal standards has not yet been matched by strategies to improve quality and presentation of meals. Students in this engaged group had advocated for change surrounding these issues prior to the implementation of school meal reform, including transitioning to scratch-cooking, improving cafeteria infrastructure, and increasing lunch period time. Addressing these issues in these urban, underserved communities may ensure that the complete impact of the revised meal standards to improve the school food environment may be realized.

IMPLICATIONS FOR SCHOOL HEALTH

Students in this study recommended that schools move toward fresher food items and scratch-cooking as a way to improve the quality and presentation of meals. A recent study reports on the widespread need

for kitchen equipment and infrastructure to support the preparation of healthy meals.³² The authors recommended that federal, state, and local governments prioritize funding to schools to improve equipment and infrastructure, as well as for school officials and policymakers to work collaboratively with the community to implement strategies to meet equipment needs.³² The USDA provides NSLP Equipment Assistance grants to facilitate the preparation of healthier school meals; grants are awarded through state agencies with a priority for high needs schools with 50% or greater FRPL eligible students.³⁴ In addition, programs such as Farm to School, the Fresh Fruit and Vegetable Program and Harvest of the Month also provide varying mechanisms to facilitate access to fresh and local produce. Our student-driven recommendations suggest the need for such programs to be sustained and expanded.

Further, student recommendations offer potential implications for the recent Local Wellness Policy Final Rule.³⁵ Both school meal standards and nutrition education are provisions of this rule. Students in this study advocated for better communication and nutrition education related to school meal reform, suggesting that school districts may leverage nutrition education to complement and facilitate school meal standards implementation. Students also advocated for policymakers, researchers, and child health advocates to increase opportunities for students to be involved in all stages of policy development, implementation, and efforts to sustain the practices that impact them the most. Also included in the Local Wellness Policy Final Rule is a requirement that students be included as a stakeholder that should participate in the “development, implementation, periodic review, and update of the local wellness policy.”³⁵ Such policy language creates an opportunity for school districts—who may determine the extent of involvement—to truly engage students with school meal reform.

Human Subjects Approval Statement

This study was approved by the University of Illinois at Chicago Institutional Review Board (#2015-0720) and the University of Connecticut Institutional Review Board (H15-165).

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