School Site Visits for Community-Based Participatory Research on Healthy Eating

Anisha I. Patel, MD, Laura M. Bogart, PhD, Kimberly E. Uyeda, MD, Homero Martinez, MD, PhD, Ritamarie Knizewski, RD, Gery W. Ryan, PhD, Mark A. Schuster, MD, PhD

Background: School nutrition policies are gaining support as a means of addressing childhood obesity. Community-based participatory research (CBPR) offers an approach for academic and community partners to collaborate to translate obesity-related school policies into practice. Site visits, in which trained observers visit settings to collect multilevel data (e.g., observation, qualitative interviews), may complement other methods that inform health promotion efforts. This paper demonstrates the utility of site visits in the development of an intervention to implement obesity-related policies in Los Angeles Unified School District (LAUSD) middle schools.

Methods: In 2006, trained observers visited four LAUSD middle schools. Observers mapped cafeteria layout; observed food/beverage offerings, student consumption, waste patterns, and duration of cafeteria lines; spoke with school staff and students; and collected relevant documents. Data were examined for common themes and patterns.

Results: Food and beverages sold in study schools met LAUSD nutritional guidelines, and nearly all observed students had time to eat most or all of their meal. Some LAUSD policies were not implemented, including posting nutritional information for cafeteria food, marketing school meals to improve student participation in the National School Lunch Program, and serving a variety of fruits and vegetables. Cafeteria understaffing and costs were obstacles to policy implementation.

Conclusions: Site visits were a valuable methodology for evaluating the implementation of school district obesity-related policies and contributed to the development of a CBPR intervention to translate school food policies into practice. Future CBPR studies may consider site visits in their toolbox of formative research methods.

Introduction

The prevalence of overweight among U.S. children tripled between 1963–1970 and 1999–2000. In view of the fact that students spend a large proportion of their time in schools, it is not surprising that schools have been targeted for obesity prevention activities at federal, state, and local levels. Students consume 35% of their daily energy intake at school, so many of these obesity prevention efforts have specifically focused on policies to improve the healthfulness of the school food environment.

In 2004, the federal Child Nutrition and Women, Infants, and Children Reauthorization Act required that school districts participating in the National School Lunch Program (NSLP, a federally funded program that provides nutritionally balanced low-cost or free lunches to eligible school children) create wellness policies that outline nutritional guidelines for school food. From 2003 to 2005, states adopted 122 bills and 71 resolutions related to obesity prevention, most covering changes to school food. School districts have also worked to ensure that nutritious food and beverage offerings are available in schools. For example, the Los Angeles Unified School District (LAUSD), the second largest district in the U.S. (with more than 800 schools) and the site of the present study, has been active in creating policies aimed at reducing childhood obesity, with many of its policies subsequently enacted at the state level. In 2002, LAUSD implemented the Motion to Promote Healthy Beverage Sales, which banned the school sales of soft drinks and other beverages with high sugar content. An Obesity Prevention Motion, passed in 2003, provided nutrient stan-
data analysis, and the interpretation and dissemination of research, including identification of community health organizations equitably participate in all phases of participatory research (CBPR) is a research approach in which academic researchers, community members, and organizations equitably participate in all phases of research, including identification of community health concerns, intervention design, study implementation, data analysis, and the interpretation and dissemination of study results. This approach may be an effective means to formulate school-based obesity prevention programs and policies because of the large number of stakeholders involved and the complexity of the problem.

Ethnography, the study and systematic recording of culture, may be a useful means in CBPR for helping researchers understand community context and determine community priorities for research. Ethnographers often use a variety of methods (e.g., observations, document collection, qualitative interviews) to gain rich cultural understandings of communities or groups of individuals. Drawing on ethnographic techniques, site visits involve trained observers in gathering information through multiple methods (e.g., observations, document collection, qualitative interviews) from settings relevant to the research. Although typically employed for evaluative purposes, site visits can be formative, helping communities and researchers to jointly understand the culture and community context of research settings. The present paper describes how site visits informed the development of a middle school–based intervention to promote healthy eating practices through translation of policy into practice.

Methods
Context of Partnership

The UCLA/RAND Center for Adolescent Health Promotion (a Prevention Research Center funded by the CDC) has a history of conducting CBPR within Los Angeles (LA) communities. The center established two advisory boards to inform community priorities for research: a community advisory board (CAB) made up of school teachers, parents, community leaders, and other key stakeholders from Carson and Wilmington (adjacent communities in southwestern LA County); and a youth community advisory board (YCAB) made up of LAUSD high school students. In response to the advisory boards’ requests for the center to study school-based obesity prevention, the center partnered with LAUSD to develop a CBPR intervention to address obesity among middle school students. To guide all phases of the research study, the center established a Healthy Living Advisory Board (HLAB) made up of LAUSD administrators, school board representatives, and community leaders with expertise in child obesity issues (e.g., representatives from the public health department, food policy organizations, and community-based organizations).

Through semistructured interviews with key stakeholders and focus groups with parents and students about community priorities for obesity prevention programming, the community–academic team determined that the middle school–based obesity intervention should include a focus on bringing LAUSD nutrition policy into practice. Although 79% of LAUSD students qualify for free and reduced-price lunches through the NSLP, a daily average of only 35% of 6th- to 12th-graders participate in the NSLP.

The specific focus of the present research was on the Cafeteria Improvement Motion, which was passed in December 2005 by LAUSD’s board of education and which directed district leaders to implement changes to improve school nutrition. This motion requires the district to work with researchers, parents, and students to improve the nutritional content of foods offered (e.g., through lower fat, sugar, and sodium) and reassess all aspects of food-service operations in an effort to increase NSLP participation. Specific components of the motion include increasing NSLP participation by incorporating student and parent input about school meals, ensuring that students have sufficient time to eat their meals, developing a comprehensive program to market cafeteria meals to students based on student and parent feedback, increasing the variety of fresh fruits and vegetables offered, and posting point-of-sale nutritional information about foods and beverages so students can make healthier choices.

At the time of this study (in 2006), the LAUSD had not yet implemented all of the Cafeteria Improvement Motion policies. To develop specific intervention components and further understand the context and culture of middle school food environments, the community–academic research team and CAB selected four of the ten middle schools in Carson and Wilmington (the regional focus of the CAB) to participate in this study based on geographic location and contacts with administrators in these schools. The sociodemographic characteristics of the schools, as well as the characteristics of LAUSD as a whole, are shown in Table 1.

Community Involvement

In line with CBPR principles, the three community advisory boards and the main community partner, LAUSD, were active participants throughout the research. All partners contributed to the various research activities (e.g., development of site visit protocols and observation checklists, analysis and interpretation of results); some community partners played particularly large roles. Specifically, the director of LAUSD Student Medical Services, who served as co–principal investigator of this study, attended weekly study team meetings, helped to select site visits as a methodology for intervention development, assisted with protocol development and direct observations, helped with manuscript development, and participated in presentations of site visit results to community members. The senior administrator of LAUSD’s Food Services Branch also participated in most phases of the research (e.g., site visit protocol development, school recruitment, site visit observations, dissemination of results to the community, and manuscript development). Another main community partner (the Director of the Carson Family Resource Center, who was a CAB member) helped the team establish relation-
Site Visit Protocol

Researchers and community partners worked together to develop the site visit protocol. The conceptual model for this study drew from social–cognitive theories of health behavior change and ecologic influences.\textsuperscript{25} Within this model, students’ eating behaviors are influenced by their background (e.g., demographics, culture); beliefs; attitudes; social norms; self-efficacy; skills; abilities; intentions; and environmental factors.\textsuperscript{25} The community–academic team conducted focus groups with students to examine influences such as student beliefs, attitudes, and peer norms;\textsuperscript{19} site visits were selected to gain insight regarding environmental influences on students’ eating behaviors. The specific framework for the protocol was based on the flow of food through the school environment. To inform the framework for the site visit protocol, the community–academic team observed two different cafeteria settings to examine how food moved through cafeterias. Specifically, observers noted that food was delivered to the cafeteria; prepared in the school kitchen; presented to students in cafeterias; and then selected by students who ate, discarded, or traded food items. This framework helped the community–academic team define activities that could be conducted in the school food environment, including mapping of school cafeteria layout, listing of food and beverage offerings, document collection, making observations, and conducting field interviews. After the protocol was developed, an LAUSD Food Services representative led a mock site visit to a district middle school outside of the study area. The mock site visit helped the community–academic team refine the observation protocol and determine the number of observers and time necessary for conducting school cafeteria observations.

Site visit observers were members of the community–academic partnership and included CAB and HLAB members, nutritionists, pediatricians, an anthropologist, and research assistants. Site visit observers underwent a 3-hour training to review site visit procedures, observational checklists, and templates.

Site Visit Activities

From September to October 2006, site visit observers used multiple methods, including mapping of cafeteria spaces, listing of food and beverage offerings, collection of documents, direct observations of students in cafeterias at lunch, and field interviews, to gain a better understanding of the middle school food environment in LAUSD. At each school, site visits occurred over a 2-day period to account for variability in entrée offerings and school schedules (i.e., shortened days). Site visit dates were selected based on school preferences and observers’ availability. Table 2 shows site visit mapping, listing, and observation activities; corresponding checklist categories; field note descriptions; and examples from site visits.

Observers arrived at the school about 1 hour prior to lunch to collect relevant school documents (e.g., school schedule and menu) and to map cafeteria spaces and list school food and beverage offerings using a semistructured checklist. Following site visits, research assistants compared food and beverages sold in middle school stores and vending machines to an online list of food and beverages that meet LAUSD Beverage Resolution and Obesity Prevention Motion policies for saturated and total fat, added sugar, sodium, and portion size.

Site visit observers also conducted direct observations of students in the middle school cafeterias at lunch using semistructured observation templates. For consistency, a core group of six observers recorded the same observations across sites. Four additional trained observers, who were not available for all site visits, helped supplement observations in heavy-volume areas. Observers were instructed to spread out to different parts of the eating area to capture variation in student consumption patterns and behaviors (e.g., close to vending machines/school stores and cafeteria lunch lines). Observers were not instructed to spend a particular amount of time on each observation but rather to continue the observation until little new information was emerging.

To further understand decision-making processes that may affect students’ food and beverage choices (e.g., lunch line arrival times, peer influences), one or two study team members observed students (n=73) as they purchased their food

<p>| Table 1. Sociodemographic characteristics of site visit schools\textsuperscript{a} (% unless otherwise noted) |</p>
<table>
<thead>
<tr>
<th>School</th>
<th>API</th>
<th>Black</th>
<th>Hispanic</th>
<th>White</th>
<th>English learners</th>
<th>Physically fit\textsuperscript{b}</th>
<th>NSLP eligibility\textsuperscript{c}</th>
<th>Student enrollment (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1\textsuperscript{a}</td>
<td>24</td>
<td>20</td>
<td>54</td>
<td>3</td>
<td>19</td>
<td>13</td>
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<td>25</td>
<td>11</td>
<td>60</td>
<td>4</td>
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<td>27</td>
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</tr>
<tr>
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<td>1</td>
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<td>10</td>
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<td>5</td>
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<td>30</td>
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<tr>
<td>Districtwide</td>
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<td>11</td>
<td>73</td>
<td>9</td>
<td>38</td>
<td>20</td>
<td>79</td>
<td>704,417</td>
</tr>
</tbody>
</table>


\textsuperscript{a}Although students are asked to report primary and secondary racial and ethnic identities, the Los Angeles Unified School District reports only the primary racial/ethnic group recorded by students.

\textsuperscript{b}The percentage of students who are physically fit is the number of students who met six fitness criteria (aerobic capacity, body composition, abdominal strength, trunk extensor strength, upper body strength, and flexibility) divided by the total number of eligible students in the tested grade level (7th grade).

\textsuperscript{c}NSLP eligibility is the number of students who are eligible for free and reduced-price lunch through the National School Lunch Program.

API, Asian or Pacific Islander

English

Physically fit

NSLP eligibility

Student enrollment (n)
from cafeteria buffets and windows, school stores, and vending machines. One to two study team members also observed student consumption patterns by observing students (n=84) while they were eating. Observations included amounts of foods and beverages consumed; whether students ate with friends; pace of eating (i.e., slow, average, rushed); and notes on student behavior during lunch (e.g., socializing, exercising). To assess the waiting times in lines, another observer recorded cafeteria line wait times with a stopwatch. One to two observers were also stationed by trashcans, where they described foods and beverages that were discarded.

During site visits, observers also engaged school staff and students in impromptu, unstructured field interviews. Instead of relying on interview guides, observers used cafeteria observations to shape discussions with school staff and students; they were instructed to handwrite field notes to document conversation content and student and staff quotations.

### Data Analysis

Inductive coding was used to examine observation checklists, school documents, and handwritten field notes for common themes. From these observation records, nine major (e.g., structure and timing of lunch) and 70 minor (e.g., number of lunch periods) themes were identified. These themes were used to develop a mutually exclusive and exhaustive codebook that was used to manually code all observation records. Any disagreements in coding were discussed and then relevant sections of site visit documents in which there were discrepancies were recoded. Cohen’s Kappa, a robust measure of inter-rater reliability, was used to examine the consistency between the two coders for all categoric observations. Intraclass correlation was used to calculate inter-rater reliability for continuous ratings such as line length.

Of 68 categoric observations, interrater consistency was perfect (Kappa=1.0) for 83% (58 observations). For the
The cafeteria food is gross because it is sometimes still
visits. As one student remarked during the site visits,
research team when speaking with students during site
eliciting student input about cafeteria programs.
to make healthier food and beverage choices; and

LAUSD school cafeterias. At the four schools in the
ensure that students have sufficient time to eat in
Improvement Motion aims: (1) increasing student par-
framed with regard to three major LAUSD Cafeteria
motion, another commonly men-
unhealthy and of poor
quality.22 Such perceptions were also heard by the
research team when speaking with students during site
visits. As one student remarked during the site visits,
“The cafeteria food is gross because it is sometimes still
frozen and greasy.” Another student said, “The food
here is why we are fat like this.”

The motion recommends that student and parent
input be used to develop a comprehensive program to
market school meals to students in efforts to increase
NSLP participation. Signs were posted in windows at
two schools to alert students to available NSLP food
options, but observers noted that signs were small,
handwritten, difficult to read, and not posted for food
items such as yogurt parfaits and salads (newer items
specially formulated to meet the motion’s revised
nutrition standards). Observers noted that students
needed to select a cafeteria food window before they
were close enough to see the food options at the
window. At one school a student said, “I wish the signs
were larger so I can see them from the end of the line.”

Increasing Student NSLP Participation
One aim of the Cafeteria Improvement Motion is to
ensure that students have sufficient time to eat in
LAUSD school cafeterias. At the four schools in the
study, the lunch period lasted 30 minutes. Although
observers noted that cafeteria lines appeared to be long
at most schools, the line length averaged 4.2 minutes at
three of the four schools. One school had longer lines,
with an average wait time of 9.3 minutes (range = 4–
14.5 minutes). Despite perceptions that the lunch
period is too short for students, nearly all students who
were observed finished most or all of their meal.

According to the motion, another commonly men-
tioned reason for low NSLP participation is the percep-
tion that the food offered is unheathly and of poor
quality.22 Such perceptions were also heard by the
research team when speaking with students during site
visits. As one student remarked during the site visits,
“The cafeteria food is gross because it is sometimes still

remaining ten categoric ratings, Cohen’s Kappas averaged
0.65. The two continuous ratings had intraclass correla-
tions of 1.0.

Results
Site Visit Observations Relevant to the Cafeteria
Improvement Motion
Site visit results, described below and in Table 3, are
framed with regard to three major LAUSD Cafeteria
Improvement Motion aims: (1) increasing student par-
参与 in the NSLP; (2) facilitating students’ ability
to make healthier food and beverage choices; and
(3) eliciting student input about cafeteria programs.

<table>
<thead>
<tr>
<th>Cafeteria improvement motion policy</th>
<th>Site visit observation</th>
<th>Intervention component</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cafeteria improvement motion component 1: increase participation in the NSLP</td>
<td>Signs of entrées offered for students were handwritten, difficult to read, and small. Signs were not available for all entrée and à la carte items.</td>
<td>Larger signs with greater visibility were developed for students to be aware of cafeteria entrées.</td>
</tr>
<tr>
<td>Cafeteria improvement motion component 2: facilitate students’ ability to make healthier choices</td>
<td>Only one school had daily offerings of sliced fruit. Whole fruit was seen discarded in trashcans.</td>
<td>Arranged (and paid) for cafeteria managers to introduce sliced fruit in the cafeteria by ordering presliced fruit from cafeteria distributors.</td>
</tr>
<tr>
<td>Cafeteria improvement motion component 3: elicit student and parent input to improve the NSLP</td>
<td>No nutritional information was posted at any of the site visit schools.</td>
<td>Large signs were posted with nutritional information for foods and beverages available in the cafeteria.</td>
</tr>
</tbody>
</table>

Table 3. Role of site visit observations in translating policy into practice in the school food environment

Source: Los Angeles Unified School District. Los Angeles School District Cafeteria Improvement Motion. cafe-la.lausd.k12.ca.us/motion.htm
NSLP, National School Lunch Program

Facilitating Students’ Ability to Make Healthier Food and Beverage Choices
The Cafeteria Improvement Motion also mandates that
a variety of fresh fruits and vegetables be available
throughout the meal period. During the site visits, a
limited variety of fresh fruits and vegetables was ob-
served. A small number of prepackaged salads were
available at two of the four schools, and only one of
the four schools had a salad bar. At three of the four
schools, fresh fruit was mainly available as whole fruit
(e.g., whole apples, oranges, peaches, pears). In trash-
can observations, uneaten whole fruit was repeatedly
observed being discarded. According to a group of
students at one school, students may prefer presliced
fruit over whole fruit because eating whole fruit is
awkward in front of friends (especially for students who
wear dental braces), and peeling some fruit such as oranges can make hands sticky.

Although school administrators expressed enthusiasm for ensuring that a variety of fresh fruits and vegetables were available at mealtimes, many said that implementing programs (e.g., providing a salad bar) would be difficult because of such barriers as staffing shortages, cost, and administrative burden. At three of the four schools, food services employees said that they felt they were short-staffed. Solutions to employee shortages included substitute and student employees; at one especially short-staffed school, the assistant principal regularly worked in the cafeteria. At one school, the cafeteria manager said that he ordered presliced fruit to decrease the prep time for a fruit and salad bar. Although the Cafeteria Improvement Motion also states that nutritional information should be posted for all entrées and à la carte items in the cafeteria, such information was not posted at any of the four school sites.

Eliciting Student Input About Improving Cafeteria Programs

One major suggestion made by students in site visit field interviews was to increase beverage offerings as a part of the NSLP. Beverages offered through the NSLP included 100% juice in cartons at three schools, and nonfat plain and chocolate sweetened skim milk in plastic bags across the four sites. At the four schools, two to five porcelain drinking fountains were in outdoor seating areas located outside of the cafeteria. Observers noted that fountains had candy wrappers, leaves, or debris in them, and none of the fountains at the schools had chilled water. Only a few students were seen drinking water from the fountains at mealtimes.

In compliance with the LAUSD Motion to Promote Healthy Beverage Sales, beverages for purchase ($1.00 – $1.25/item) through vending machines or school stores included 100% fruit juice, sports drinks, flavored sweetened milk, and bottled water. Unopened bags of cafeteria milk were seen discarded at each school in trashcan observations. In employee observations, cafeteria staff were seen giving students milk; they explained that they needed to make sure that meals contain three food or beverage components (milk, fruit/vegetable, grains/bread, or meat/meat alternative) so schools could be reimbursed through the NSLP. Students said they threw away milk because it was packaged in unappealing plastic bags and was warm. At three of the four schools, students requested that water be offered in addition to juice and milk as a part of the standard lunch or available for free somewhere in the cafeteria. At one school, students were observed pushing in line to purchase water from a vending machine during a class break; observers interpreted this pushing to be due to short breaks between classes and too few bottled water vending machines at the school. Some students also remarked that bottled water was expensive.

Discussion

In this study, information gathered from site visits enabled the community–academic research team to determine priorities for a school-based obesity prevention program that would help LAUSD translate district obesity prevention policy (e.g., the Cafeteria Improvement Motion) into practice within schools. Specifically, site visits helped the community–academic research team generate ideas to increase NSLP participation; envision programs to assist students in making healthy food and beverage choices; and gather input about cafeteria programs from students, cafeteria staff, and school administrators.

Although an increasing number of states and school districts have adopted policies to improve the healthfulness of school food environments, such policies may not be implemented at the local school level. As evidenced by this study, site visits can provide researchers, policymakers, schools, and communities with a useful tool for assessing whether obesity-related policies are being implemented in schools as intended.

In addition to its utility in assessing the implementation of school obesity-related policies, site visits can also help researchers and policymakers—stakeholders who typically work outside of the school realm—to gain an understanding of the school food environment. For example, after speaking with cafeteria staff at the four schools during site visits, the community–academic team had a greater knowledge of barriers, such as cost and understaffing, that many schools face when trying to provide nutritious and palatable meals to students. The team therefore sought to design an intervention that would bring LAUSD obesity policy into action, while also taking into account such concerns and increasing intervention feasibility and sustainability. For example, based on student feedback, the community–academic team decided to offer an additional variety of presliced fruit or vegetable in the cafeteria daily. Rather than asking already understaffed cafeteria employees to manually slice fruit or vegetables for the intervention, presliced fruit was ordered from cafeteria distributors.

This study has limitations. The qualitative nature of the study limits the extent to which the current findings can be quantified, even though terms such as “most” or “the majority” are sometimes used to describe results. Because site visits were limited to only four schools within one region of LA, specific observations may be less applicable outside of LA or even beyond the areas of LAUSD where they were collected. For example, the four schools included in this study were in compliance with LAUSD policies regarding foods and beverages that can be sold in district schools; however, in 2008,
This paper highlights how site visits were used to translate a specific policy (the LAUSD Cafeteria Improvement Motion) into practice within schools in one geographic area of LA. Site visit methodology may be applied to other settings targeted in CBPR efforts. For example, site visits may prove useful in workplaces, which have served as the setting for recent CBPR studies. In one study, site visits helped researchers identify useful practices to promote healthy weight among employees of small- and medium-sized U.S. worksites. Other potential contexts for applying site visit methodology to develop interventions could, for example, include partnerships with faith-based organizations, parks and recreation centers, tribal communities, or neighborhood housing developments.

**Conclusion**

This paper provides a description of how site visits were used to translate a policy into practice within the school food environment. Future CBPR studies may want to consider including site visits in their toolbox of formative research methods.

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**References**


