

**Evaluating the Impact of a Nutrition
Education Program in Baltimore City
Schools**

Dana Kindermann

MPH Capstone Project

Advisors: Roni Neff and Anne Palmer

4/30/08

This paper looks at the Food Is Elementary program, a nutrition education program recently implemented in eight Baltimore City public elementary and middle schools. In 2006, as part of its *Local Wellness Policy*, the Baltimore City Public School System required that all schools provide a minimum of 45 minutes per week of nutrition education to 1st through 5th grade students.¹ Nutrition education has been recognized as one key element in the fight against the growing obesity epidemic. This study uses one of these eight schools as a case study to examine the effect of a school based nutrition and cooking course on student food consumption patterns. Using qualitative research methods, the study seeks to understand the diet and health impacts of the program in the context of broader influences on food decision-making behavior among students and families.

Childhood Obesity

One of the greatest public health challenges of our time is the tremendous rise in obesity among young people. Data from two NHANES surveys (1976–1980 and 2003–2004) show that the prevalence of overweight increased in those twenty five years from 5.0% to 13.9% for children aged 2–5 years, from 6.5% to 18.8% for those aged 6–11 years, and from 5.0% to 17.4% among those aged 12–19 years.² While the relationships among class, race and risk of obesity are complex, several studies have shown that minorities and individuals from lower socioeconomic status are at increased risk for

¹ Baltimore City Public School System *Local Wellness Policy*. 6/13/06. <<http://www.baltimorecityschools.org/About/pdf/Local_Wellness_Policy.pdf>>. Accessed 4/10/08.

² Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among U.S. children and adolescents, 1999–2000. *JAMA* 2002;288:1728–1732

being overweight.³ According to the Youth Behavioral Risk Study, in 2005, 37% of Baltimore City high school students were overweight or at risk for being overweight (over 85th percentile for BMI).⁴ Because the causes of this epidemic among young people are complex, finding effective prevention and treatment solutions is difficult. The approach that must occur on the local, regional, and national level, must be multi-tiered and address both behavioral and structural changes.

In 2001, the US Surgeon General's *Call to Action to Decrease Obesity and Overweight* outlined recommendations to improve children's diets and increase physical activity levels. The report makes light of the multiple causes of obesity and overweight among children and adolescents, and suggests that there is both a biological and environmental component. Before making specific suggestions, the report stresses the importance of adopting both a healthy body image and a healthy relationship with food. The report states that children should exercise at least 60 minutes a day (while noting that almost half of adolescents watch at least two hours of television a day). The report also makes many recommendations relating to diet, such as eating at least five fruits and vegetables a day, reducing caloric and fat intake, and avoiding restrictive diets.⁵ The report notes that both individual behavioral change and environmental change are important in addressing the problem of childhood obesity.

³ Wang Y, Zhang Q. Are American children and adolescents of low socioeconomic status at increased risk of obesity? Changes in the association between overweight and family income between 1971 and 2002. *American Journal of Clinical Nutrition*. 2006 Oct; 84(4): 707-16.

⁴ Youth Behavioral Risk Surveillance System: Youth Online, Comprehensive Results. Center for Disease Control and Prevention. Last updated 4/10/2007. <<<http://www.cdc.gov/HealthyYouth/states/locals/md-baltimore.htm>>>. Accessed 4/12/2008.

⁵ U.S. Department of Health and Human Services. "The Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity: Overweight in Children and Adolescents." Last updated 1/11/07. <<http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_adolescents.htm>>. Accessed 4/22/08.

Solutions to address environmental influences must play a dominant role in the challenge of reversing the current trends. Since children spend so many hours at schools, schools have been specifically targeted to promote the development of healthier children. For example, there has been closer scrutiny on policies relating to food sold in vending machines, cafeterias, and extracurricular events; the nutritional content of meals provided by the National School Lunch Program and Breakfast program; and physical education requirements. Providing nutrition education for both students and families is an essential component in child and adolescent health promotion.

Recommendations to include nutrition education have been made at the national and local level, and the federal government took an official stance on this issue through the 2004 *Child Nutrition and WIC Reauthorization Act*. Through this act, every school system was required to create a *Local Wellness Policy* that must describe goals for nutrition education, physical activity and other school- based activities.⁶ In June of 2006, the Baltimore City Public School System (BCPSS) Board of School Commissioners approved the BCPSS Local Wellness Policy. With respect to nutrition education, the Policy stipulated that students in grades one through five receive ninety minutes of nutrition education every week.⁷ While the authors of the Policy officially mandated that class time be reserved for teaching students about nutrition, the actualization of this Policy remains elusive. A year later, the Baltimore City Council Child Obesity Task Force's report stated that they were unclear about the extent to which the Policy had been implemented. In their 2007 report, the Task Force repeated the importance of a nutrition

⁶ Section 204 of Public Law 108-265, June 30, 2004; Child Nutrition and WIC Reauthorization Act. <<<http://www.fns.usda.gov/tn/healthy/108-265.pdf>>>. Accessed 4/12/08.

⁷ Baltimore City Public School System *Local Wellness Policy*. 6/13/06. <<http://www.baltimorecityschools.org/About/pdf/Local_Wellness_Policy.pdf>>. Accessed 4/10/08.

education requirement, and stipulated that it “focus on changing specific behaviors rather than learning general facts about nutrition, employ active learning or experimental strategies, involve the child’s family to reinforce classroom nutrition education, provide well-trained staff to teach nutrition, and aggressively promote fruits and vegetable choices.”⁸ The Food Is Elementary program, the nutrition education program recently implemented in eight Baltimore City schools, creatively meets the recommendations set by the CDC, the Baltimore City Public School System’s *Local Wellness Policy*, and the Baltimore City Obesity Task Force’s report, and represents one important step in the reversing the current trend in the health of young people.

Food Is Elementary Program

Food Is Elementary (FIE) is a food and nutrition education program developed by Antonia Demas, president of the Food Studies Institute (FSI). The FIE curriculum provides hands-on, sensory-based education to teach students about health-promoting, plant-based foods. A food educator trained by FSI teaches the weekly classes. Students learn about how food affects their minds and bodies, where different foods come from, how they are grown (through school gardens and indoor earth boxes) and how to prepare nutritious multi-cultural meals. Through the classes, students learn about, prepare, and taste different foods; for many students, this represents their first exposure to more nutritious meal and snack options. The goal is to encourage students to have a healthy relationship with food that may in turn lead to changes in consumption patterns and acceptance of alternative food choices. As a corollary of this goal, students participating in the program will be more likely to choose healthier lunch options if they are offered as

⁸ Report of the Baltimore City Council Child Obesity Task Force. 11/2007.
<<http://www.baltimorecitycouncil.com/ChildhoodObesity_Report.pdf>>. Accessed 4/12/08.

part of the school lunch. A secondary objective is to involve students' families by sending student journals and recipes home and by inviting parents to volunteer and/or participate in community dinners and after school activities. The hope is that family members can also benefit from the FIE educational experience.

FIE has been implemented in over 1000 schools and other institutions across the country. Dr. Demas first brought the program to two Baltimore City schools in 2004. Because of the popularity and support of the program in these schools, Dr. Demas met with several other interested schools so that the program might be expanded. This was made possible in January 2008 through a grant made to FSI from the Stop and Shop Foundation. This past January, six additional city public schools solicited and received funding to bring the curriculum into their schools.

Introduction to the Study

Dr. Demas, a visiting professor at Johns Hopkins, invited students to help with the implementation and evaluation of the program in the six new schools. This study focused on the evaluation of the program in one school. Patterson Park Public Charter School (PPPCS) was chosen for several reasons: the school had been active in proposing research questions that could be used to frame the study, PPPCS had been trying to implement FIE for several years and was eager for assistance in getting the most benefit out of the program, and the school is easily accessible from the Bloomberg School of Public Health campus. PPPCS's food educator, and community school coordinator and I jointly designed a research study that would both address the questions the school had raised and document the impact of the program on student eating behaviors. This documentation would be useful to further expand the program to more schools in the

future as well as to PPPCS to ensure the sustainability of the FIE program and to advocate for changes that might further increase its impact.

Students participating in the FIE program take a pre and post-test to determine how much they have learned through the program. While an increase in student knowledge measured through these tests provides one method to evaluate the program, we recognized that other quantitative measurements of the efficacy of the program would be hard to assess. For example, we didn't expect to see changes in BMI in participating students over a 6 month or one year period. Reductions in BMI would also be unlikely as long as the school and home eating environments remained the same.

We therefore decided to take a qualitative approach to study the effect of the FIE on food purchasing and consumption patterns among students and families at PPPCS. If we could show that participating students were beginning to ask for different meal and snack options, we could then extrapolate that their health might benefit from these dietary changes. I was interested to see how the environment (both at the school and around where PPPCS families live) might facilitate or limit the program's effects on health and diet. Specifically, how might factors such as economics, access to healthy food options, individual preferences, and food marketing lessen the impact on dietary changes expected among participating students? The objective of the study was to understand the reach of the program in the context of broader influences on food decision-making behavior among families of PPPCS. The information collected through the study will be provided to interested families and employees of PPPCS and presented to the Baltimore City Public School System school board later this summer. It will also be included in FSI's

2008 Final Report and presented at a national conference in Baltimore led by FSI in fall 2008.

Patterson Park Public Charter School

The history of PPPCS provides the context for how the program fits within the broader identity and mission of the school. The school was opened in 2005 to provide students a “high-quality, community-based education, capitalizing on the diversity of the nearby neighborhoods and the resources of Patterson Park.”⁹ The school is a public charter school, meaning that it is open to all students and does not charge tuition. By Maryland law, a “public charter school” is nonsectarian, is chosen by parents for their children, and is open to all students on a space-available basis. As a public charter school, parents and community members are given freedom to determine the budget, staff, curriculum and teaching methods used to meet state and local academic standards. The school is given a certain amount of money per student from the City, and the school can then determine how it wishes to use these funds. The school currently includes kindergarten through 6th grade, although the eventual goal is to expand it to 8th grade.

The idea to open the school sprang from the Patterson Park Neighborhood Association, and thus families and community members, rather than city school administrators or educators, largely shaped the school’s identity. The original “school founders” were a group of about 50 parents and community members who created the charter and helped to get it passed by the Baltimore City Public School Administration. From the beginning, the founders wanted the school to represent the diversity and inclusiveness of the Patterson Park community, and have the park (and surrounding organizations) serve as a resource for the school. The founders wanted an innovative

⁹ Patterson Park Public Charter School Information Pamphlet, 2/2008.

curriculum that would be thematically organized, hands-on, and project-based. They also wanted to avoid adopting the highly structured, direct instruction, test-prep philosophy they saw in other schools. From the beginning, there was an emphasis on parent and community involvement, and all parents have agreed to complete a designated amount of volunteer hours each year.

The influence of the founding members' efforts can be seen in the diverse student population as well as in the contributions made by parents and the community to the schools' programs and curriculum. Demographically, the student population is currently about 70% African American and 20% Hispanic, and about 70% of the students live in one of six neighborhoods surrounding Patterson Park. While PPPCS family income levels are highly variable, about two thirds of students are eligible for the free and reduced price school lunch program. Parents continue to be quite involved in the evolution of the school, as evidenced by the high attendance and participation at monthly parent association meetings as well as by completion of volunteer hours.

The FIE program was brought to PPPCS in January of 2008, although several founders and school employees had been trying to bring the program to the school since 2005. The parents who led the move to bring the program to the school hoped it would level the playing field in terms of exposure to and knowledge of healthy foods among all students as well as contribute to the "whole child" educational experience offered by the school. The community school coordinator (who oversees the program at PPPCS) further supported the program because of its family and community oriented approach. PPPCS, as well as the other Baltimore schools that have implemented FIE, has agreed to take on the financial responsibility of sustaining the program after three years (when the grant

secured by FSI will end). According to the community school coordinator, this take-over is feasible as long as the school can show that there is broad support of the program.

Methods of the Study:

The FIE program is run differently at each of the schools in Baltimore, based on the needs, interest, and resources available. At PPPCS, the course is offered to third graders only, who receive a weekly one-hour class. The community school coordinator chose third grade because she thought that third graders would be most likely to benefit from the program and because she thought the third grade teachers had a good handle on their students. The research has consisted of in-depth interviews with parents (n=9), teachers (n=4), the food educators at PPPCS and Hampstead Hill, and the PPPCS community school coordinator. Parents were to be interviewed by through personal contact at parent association meetings, letters sent home with their children, messages posted on the school's list-serve. Of the nine parents, three were Caucasian, three were Hispanic, and three were African American. It is important to note that these nine parents may not be representative of the parents as a whole at PPPCS. These were parents that expressed an interest in the project and contacted me because they wanted to participate. Three focus groups were also conducted with participating third graders (n=14). Finally, much of the research was based on participant observation: I was trained as a food educator by FSI, I observed several of the FIE classes, and I participated in the monthly community dinners organized by a food educator at a different participating school. The Johns Hopkins Institutional Review Board approved the research plan for the study.

Collaborating with the community school coordinator at PPPCS and Dr. Demas, I developed the questions for the interviews and focus groups. Parent interviews focused on how parents define nutrition and health, how they make food purchasing and preparation decisions, what they hope for in a nutrition education program, and whether they have noticed any changes in their children's knowledge, attitude, or behavior regarding food since the start of the program. Teacher interviews focused on the nutritional challenges they observe in their students and their impressions of the appropriateness and value of the FIE program. In the focus groups, 3rd grade students were asked about what "healthy" and "nutritious" meant to them, what foods they liked and disliked and why, what foods they commonly ate at home and at school, and what they had learned through the FIE program.

Influences on Food Purchasing Behavior among Families at PPPCS

Access to Food Stores

Interviews with parents began with questions about where they did their food shopping, how they chose which foods to buy, and how they made meal-planning decisions. This information is important because it relates to the extent to which nutrition education might influence what parents choose (or are able) to serve their families to eat. Parents frequented a variety of food stores – Whole Foods, Trader Joes, Safeway, Stop and Shop, local corner stores and markets, ethnic food stores, farmer's markets, Wal-Mart, ALDI's, and SAM's. These stores were chosen based on cost, perceived nutritious value and taste of the foods for sale, and location (some parents were only able to access stores by walking or by bus). One woman said she shops almost exclusively at Whole Foods and Trader Joes because she insists on

knowing exactly where each food came from and how it had been grown or raised; another told me that she has a monthly budget of \$200 to buy food for seven people and all food purchasing decisions are made with this in mind. Most parents told me they had a routine they followed in the grocery store, and while they frequently made decisions based on weekly specials, the categories of foods purchased were fairly consistent. Within the vicinity of the park, there is a Whole Foods and a Safeway as well as an independently owned grocery store called Santoni's. On Eastern and Baltimore avenues, the two major roads bordering the park, there are multiple ethnic food stores (Hispanic, Greek, Polish, Italian, etc), economy stores, and fast food and take out restaurants. There is a farmer's market in one of the surrounding neighborhoods that sells local produce from May to November, and the school also sponsors a community-supported agriculture pick-up site.

A few blocks from the park in all directions, there are small food marts on almost every street corner, ("corner stores") which commonly sell packaged, frozen and canned food and in many cases, liquor. A few parents told me they used these stores for convenience when they needed something during the week and didn't have the time to go to a larger store. One of the teachers explained how she knew her students were frequenting these stores:

"You see them [the students] all the time with those little black bags that you get at the corner stores...that's where they go in the morning before school, and they go after school...their parents probably give them two dollars in the morning and they stop at the corner store and get a bag of chips and a soda for breakfast."

While they are ubiquitous and easily accessible, children are unlikely to find healthy meal or snack options at these corner stores, especially when they are given the freedom to buy things without any guidance.

Children's Food Preferences

I was also interested in learning about how children influenced their parents' food purchases. What foods were children asking their parents to buy? How were these preferences formed in the first place? Could what students' learn through the FIE program impact what their parents stocked in the refrigerator or pantry? Most of the parents told me that usually at least one child accompanied them on trips to the grocery store, and several mentioned that their children's demands were distracting and often affected what they bought. In the focus groups, the students told me that they always asked their parents' to buy them things on shopping trips, most often candy, soda, and chips. They also said that their parents usually bought them what they asked for.

All of the students were able to tell me without hesitation that "healthy eating" meant eating lots of fruits and vegetables, and that your body needs these foods to be healthy. They were also able to rattle off which vitamins are found in which foods and why these vitamins are important (this was the topic of one of their recent FIE classes). On the other hand, they just as quickly told me that their favorite foods were pizza, cookies, hamburgers, ice cream, and candy and that their "least favorite foods" were spinach ("because I don't like the taste"), greens, green beans ("cause they nasty") and fish ("because it smells weird"). When I asked one girl what made certain foods healthy, she laughed and then said, "see look [grabbing her belly], you don't want to get fat like me." While the students had apparently been taught what food they *should* be eating, this

knowledge had little effect in determining what they liked or asked for. It should be pointed out that the focus groups were conducted in February and March, when the program had just started. Most of the meal preparation occurs in the second half of the course, and it is possible that when the students actively prepare and taste these meals, their opinions may change.

Several parents noted the powerful influence that marketing has over what their children ask them to buy. For example, one parent, when asked if there was anything she'd like to change about what her daughters' asked for, commented:

“It would be nice if they [my two daughters] weren't so infatuated with fast food... The fast food companies are very smart in their marketing and the food is very appealing to kids... Half the time that they ask me to go to one of those fast food places it's because they want the toy. And the food is just sort of a by-product... Nickelodeon, for example, which is hugely popular for kids, if you look at the content of their advertising for kids, it's all for junk. It's, you know, McDonald's, it's sugary cereals, it's all the sorts of things kids end up asking for that you don't necessarily want them to be eating.”

Other parents expressed a similar sentiment, and mentioned that they recognized that the things their kids most often asked for – sugary cereals, sugary juices, “go-gurts,” “leggo-my-eggo” waFIEes, “Kids Cuisine” (a TV dinner marketed to kids) or “lunchables” – were also the things they saw most frequently advertised on TV, in magazines, on billboards, or in their children's comic books.

Cultural Influences

A few parents felt that their cultural heritage was a (or the) major determinant in the meals they prepared or purchased for their families. Two parents noted that their families' Southern roots largely shaped their family's favorite meals. This family background meant that certain foods, such as greens, sweet potatoes, ox tail, biscuits and

fried chicken were the foods that their families liked best. One grandmother told me that she spent several hours preparing large meals “in the Southern tradition” on Sundays, and that each child participated to help put the meal together. Another parent had recently moved to Baltimore from the southwest with her son, and she frequently made meals that her family had grown accustomed to from that area.

Two of the Hispanic parents I interviewed explained how both their Central American background and their desire to adopt American customs influenced what they prepared for their families. The following is one mother’s account of these multiple cultural influences:

“I think one of the problems with kids in the US is that they’re confused by different nationalities. At school, they eat “pura comida Americana.” M’s [her son] dad is [Cuban]¹⁰, and his wife is [Venezuelan]. Two different cultures. I am from [Guatemala], and my husband is [Mexican]. It’s a bit confusing. When I make rice, M. says he doesn’t like it, he likes it the way his dad or his dad’s wife make sit. I think that Cuban food has more in common with Venezuelan food, and M. prefers to eat things like that.”

This parent explained to me that her son splits time between his mother and father, and because of this, he is exposed to two very different diets. She commented that while her son’s father is much more emphatic on what their son is allowed to eat, she said it is not her nature to force any specific diet on her son. This difference she also attributed to being raised in a society where the man is often the stronger voice. M. is also cared for by an American babysitter after school, where he is introduced to an entirely different set of food practices. For example, his mother explained her reaction to his trying canned ravioli for the first time with this babysitter:

“That was the first time he tried that. I had never tried them, but he told me he liked them. I had only seen ravioli frozen before. I asked M. – ‘how do I

¹⁰ Country names changed to protect identity of subject.

prepare this?’ and he said ‘you heat it up in the microwave.’ I said ok, and bought them for him.”

For this mother, the desire to satisfy and please her son was very important, even if this meant serving him foods that were not traditionally part of her cultural background. The mother also expressed her surprise to see what her son was eating at lunch; he had never eaten meatballs or drank chocolate milk at home. She was struck by how these had become part of his regular diet, and shared that if other Hispanic parents had the time to see what their kids ate at school, they too would be astonished. She recognized that being exposed to so many different kinds of foods must be confusing to him, and she therefore wanted to let him choose the foods that he liked best. Although she admitted that the foods that M. asked her to buy – canned ravioli, McDonald’s and pizza – were probably not the healthiest options, she didn’t want to coerce him to eat certain foods or deny him those that he asked for. Because M. was being watched by so many different caregivers, this mother thought her son would really benefit from learning which foods are good for him and how to prepare them.

Time and Cost

All of the parents mentioned that time and cost affected their food shopping and meal preparation. One mother mentioned that she was beginning to feel the strain of rising food costs and that this was already influencing what she could buy. When asked if her current food budget was adequate to prepare the meals she wanted for her family, she replied:

“Pretty much yes. But it’s all about to change. Last week I was in the store buying bags of beans, ‘cause the prices keep climbing the way they climbing We’ll be doing more beans than we do now.”

Every parent told me they made decisions about which foods to buy based on what was on sale and how much they were willing or able to spend. In addition to cost, time was an important factor in food purchasing decisions. One woman explained to me that while she knew that the meals that she frequently bought off the street weren't healthy, eating on the run had become habit because of the need to quickly move from one job to the next.

The Food For Life Program at PPPCS

Every individual I spoke with about the FIE program – students, teachers, school employees, and parents – supported the decision to bring the program to PPPCS. The three third grade teachers lamented that their students' poor eating habits affected their behavior and academic performance. One teacher told me that she could tell by her students' lethargic attitude in the morning that many of them didn't have breakfast before coming to school. Although all students are eligible to pick up a free breakfast before school starts in the cafeteria, many arrive too late to pick up what is being offered. Unfortunately, the breakfast that is available is not ideal for students; usually it is a small box of sugary cereal, cookie, and/or juice. The teachers feel that this does not give their students the energy to concentrate the rest of the morning. One told mentioned that some of the students had young parents who may not know about what they should be feeding their children, and hoped that the education provided through the program would feed back to families. All three agreed that knowledge about and exposure to different foods was crucial; each also said they could tell their students were enjoying the program.

Both the food educators at PPPCS and at Hampstead Hill Academy (where the program was started four years ago) agreed that the students appeared to be enjoying the classes. The food educator at PPPCS, a former chef, described his impressions:

“They’re really excited about it all, and it’s almost infectious. They get really excited when they’re talking about cooking and working with different foods and they’re even very good about some of the drier stuff like calories and dietary fat. They’re still interested in it.”

The food educator at Hampstead Hill, who has expanded the program to include a large school garden, a culinary arts club and monthly student-prepared community dinners that serve up to 200 people said she thought her students particularly appreciated the hands-on aspect of the curriculum. The program appeals to students because they can touch and smell things and be active in the gardening, cooking, and eating process.

The participating third grade students also seemed to be enthusiastic about the program. In the focus groups, they were eager to share that they had tried a star fruit and a blood orange (“did you know an orange can bleed?”) for the first time through the program. They also told me that they were excited to bring home the fruit tarts they had made in class so their parents could try them. The high attendance at the optional after-school cooking club class also points to students’ approval of the program. Parents also told me that their kids don’t usually talk about what goes on in school unless it’s something special; most told me their kids had shared stories about the FIE class. Again, because the focus groups were done early in the course, it’s possible that more positive impacts on student diet may be seen down the road. The food educator at Hampstead Hill, on the other hand, shared several anecdotes about

students who had asked their parents to buy them certain fruits or vegetables to make at home after having tried them through the class.

All of the parents I talked to were very happy that their children were being exposed to the FIE curriculum. One particularly excited parent who is a former Baltimore City public school teacher exclaimed:

“I think every school should have it... How can we *not* need a program – in a city when so many kids are putting such crap into their bodies? How can we *not* need a program that opens them up to other things and has them tasting other things and cooking other things and seeing that other things taste good? I think we need a program like FIE in every school in Baltimore.”

Most parents told me that they were excited that all of the students would learn about nutrition and cooking from a young age. Several also commented that their children are much more likely to respect, follow, and believe what their teachers tell them than what they as parents tell them. They also thought that their children would be much more open to try new foods, especially fruits and vegetables, if their peers were also trying them. Parents also liked that their children would be learning about food from different cultures and in doing so, understand that food and nutrition can mean different things to different people. A few parents liked that the class fit well with the other skills their students were learning, including math, reading, writing, geography, science, and social studies. One parent noted that encouraging children to proactively prepare meals and snacks was the perfect way to get them to start thinking about what they are eating. Parents also shared with me that their children had hung copies of the Food Pyramid or lists of healthy snacks on their refrigerator, had started looking at food labels at home, had instructed them of the importance of putting a

moist rag under the cutting board so that it won't slip, and had proudly demonstrated how they had learned to slice a banana or cucumber.

This overwhelming support of the program can be used to advocate for the program's expansion in more schools in the future. The challenge has been that FIE has depended on private foundational grant funds and food donations; these grants are not easy to obtain and limit the program's reach. The grants are also temporary; the six schools that implemented the program this January have been guaranteed three years of funding through the current grant. After this point, the schools have agreed to take over the funding.

School Meals

While support for the FIE program was unanimous, almost all of the parents and teachers also noted the major contradiction in teaching children one thing in the classroom and then doing another through the school sponsored breakfast and lunch service. This sentiment is clearly expressed in this parent's comment:

“I think as long as we keep doing Food is Elementary just on Wednesdays and then going back to eating the same old tater tots and fish sticks and chicken fingers... it's just not going to have the same effect as if the school lunch program matched up. We're telling kids two different things – kids are very astute when it comes to detecting hypocrisy in adults and we as a school.”

Several parents expressed hopes that the program would educate and expose students to healthier foods that they would be able to choose in the cafeteria. The FIE curriculum was actually designed to do just this; Dr. Demas purposefully selected foods for each class that are part of the commodity food program. Foods such as brown rice, lentils, raisins and cranberries are free to schools through the National School Lunch Program. Ideally, students would learn about and taste these nutritious

foods through the course and then would be more likely to choose them in the cafeteria.

Parents noted many problems with the current lunch system; above all, they described meals as unhealthy and unappetizing. Other complaints include that meals are largely animal-based, everything comes in pre-packaged Styrofoam containers that the cafeteria re-heats before they are distributed, and students only have about 25 minutes to pick up their food, sit down, unwrap it, and eat. A few expressed amazement at the amount of food that is thrown away, indicating students' dissatisfaction with it. They explained that while students will get the school lunch for free, they will often throw much of it out and have a bag of chips instead. I was surprised to hear one mother share that she gives her son an extra \$2 every day so that he can buy two meals. She told me that while a meal might include meatballs, mashed potatoes, and green beans, he doesn't like the potatoes and beans. He throws this part away, and because he's still hungry, buys an extra portion of the meatballs. Parents did point out that the lunch servers were doing the best they could to ensure that students were getting healthy meals, but that significant logistical barriers limited their efforts. For example, even though the school invested in a new cafeteria (until this spring, students were eating in a tent) with a refrigerator, stove, and freezer, the facilities still don't allow meals to be prepared in the cafeteria.

While the founders of PPPCS were given considerable freedom in creating the learning environment they wanted for students, the issue of food service was unfortunately non-negotiable. All Baltimore City schools, including charters, have to buy into the service provided by the Baltimore City School System in which

everything comes from a central kitchen. This was written into PPPCS's charter, and efforts to seek an alternative food service have been effectively blocked until this mandate changes. The director of food services for the district decides on the menus for the week, and all schools receive the same meals based on this menu.

The school's charter contract is up for negotiation this year, and food service is one issue that the school is trying to re-negotiate. According to one parent, the argument has been over control over funding decisions; there has apparently been hesitation on the city's part to hand over money allocated by the state for food to individual schools. Two of the founders pointed out that this policy is currently being discussed at the state level; a change in the current policy would effectively open up the possibility for PPPCS (and other schools) to choose a food service vendor that could provide healthier meals. It would give each school the freedom to decide whether to buy in to the city-provided meal service or search for a vendor that might offer different options for the students. If the state decides to give schools this independence, the concern at that point would be economic. Schools are only reimbursed about \$2.40 per lunch through the National School Lunch Program; with so little funds available, a food service vendor's meal planning options are limited. With the current rising cost of food, it will likely only become more difficult to provide healthy meals with such a small budget allocated for school lunches. The cost of a different food service vendor would likely only be manageable if other schools also wanted to partner with PPPCS to create an economy of scale. Charter schools might be the first to want to take advantage of a change in policy, but the

smaller size of these schools' student bodies would make it more difficult to do this economically.

Limitations

The conclusions drawn from this study may be limited by a few methodological issues. The small sample size (only nine parents) may limit the conclusions that can be drawn from this study. Also, those parents that were interviewed may not be representative of the PPPCS families as a whole. It is possible that those who were interested in participating in the study may in general be more health and nutrition conscious than other parents at the school. The parents' and teachers' overwhelming affirmation of the value of teaching children about nutrition may also have been related to how participants saw me as a public health student. Their responses may have been biased because of a desire to accentuate their attention to health and nutrition issues. Also, as the interviews were conducted only two or three months into the program, it's possible that the program's impact would be greater with more time. Finally, parents, teachers and students may have felt more open in their reflections of the program and school environment if all interviews weren't conducted at the school.

Conclusion

This study affirms that the growing youth obesity epidemic is due to multiple influences on children's food consumption patterns. Among the interviewed parents, access to different foods, food marketing directed towards children, cultural heritage, time and economic considerations were the most frequently mentioned. These influences in turn impacted how families prioritized health and nutritional concerns. Factors such as access, marketing, time and economic constraints often lead to a predominance of

unhealthy, processed foods. Because of limited exposure to and knowledge of healthier foods, nutrition education can play a crucial role in offering children alternative lifestyle options. The overwhelming approval of the FIE program from students, teachers, and parents at PPPCS also indicates that this is an intervention that will likely be supported in other interested schools. While barriers such as cost and access will continue to heavily influence what children eat, nutrition and cooking education plays a critical role in challenging the multiple negative messages they are receiving. With this in mind, the benefit of providing children with the knowledge of how different foods affect their bodies as well as the appreciation of and skills to prepare healthier snacks is closely linked to their home and school environment. As long as the same breakfast and lunch options are offered in the cafeteria, the impact of the FIE program will be limited.

There is a strong need for collaboration between families, educators, health care workers, policy makers, and the community to work to reverse the current trend in diet and health among young people. The information collected through this study points to the importance of addressing the problem from multiple angles. Educating children in a positive way about the benefits of adopting a healthy diet represents one essential component in this challenge. Schools must take part by reflecting current knowledge about health and nutrition and model appropriate behavior and lifestyle choices. The Baltimore City Public School system should make the most of the exposure and education provided to students through the FIE program by changing their policies on school food service. Schools must take every opportunity to further develop healthier environments for students.

Acknowledgements:

I would like to thank Roni Neff, Anne Palmer, and Antonia Demas for all of their help with this study. I would also like to thank Polly Walker and Lori Leonard for their help editing this paper. I would also like to thank Patterson Park Public Charter School for allowing me to conduct the research at the school, and in particular, all of the parents and teachers who participated in the study.

References

- Baltimore City Public School System *Local Wellness Policy*. 6/13/06.
<<http://www.baltimorecityschools.org/About/pdf/Local_Wellness_Policy.pdf>>. Accessed 4/10/08.
- Ogden CL, Flegal KM, Carroll MD, Johnson CL. Prevalence and trends in overweight among U.S. children and adolescents, 1999–2000. *JAMA* 2002;288:1728–1732
- Patterson Park Public Charter School Information Pamphlet, 2/2008.
- Report of the Baltimore City Council Child Obesity Task Force. 11/2007.
<<http://www.baltimorecitycouncil.com/ChildhoodObesity_Report.pdf>>. Accessed 4/12/08.
- Section 204 of Public Law 108-265, June 30, 2004; Child Nutrition and WIC Reauthorization Act. <<<http://www.fns.usda.gov/tn/healthy/108-265.pdf>>>. Accessed 4/12/08.
- U.S. Department of Health and Human Services. “The Surgeon General’s Call to Action to Prevent and Decrease Overweight and Obesity: Overweight in Children and Adolescents.” Last updated 1/11/07.
<<http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_adolescents.htm>>. Accessed 4/22/08.
- Wang Y, Zhang Q. Are American children and adolescents of low socioeconomic status at increased risk of obesity? Changes in the association between overweight and family income between 1971 and 2002. *American Journal of Clinical Nutrition*. 2006 Oct; 84(4): 707-16.
- Youth Behavioral Risk Surveillance System: Youth Online, Comprehensive Results. Center for Disease Control and Prevention. Last updated 4/10/2007.
<<<http://www.cdc.gov/HealthyYouth/states/locals/md-baltimore.htm>>>. Accessed 4/12/2008.