

**Title:** Determining the feasibility and acceptability of a nutrition education and cooking program for preschoolers and their families delivered over the dinner hour in a low-income day care setting.

**Article Type:** Research Article

**Keywords:** nutrition education; cooking; parents; preschoolers

**Corresponding Author:**

Carolyn W. Gunther, PhD

Assistant Professor

Department of Human Sciences

The Ohio State University

1787 Neil Ave

313 Campbell Hall

Columbus, OH 43210

Phone : 614-292-5125

Fax : 614-292-1330

Email: [gunther.22@osu.edu](mailto:gunther.22@osu.edu)

**First Author:** Allan Wagner

**Order of Authors:** Kennel JA, Rose A, Pennywitt J, Miller CK, Holloman C, Battista-

Hesse M, Murray RD, Gunther CW

**Acknowledgements:** We thank The Ohio State University Food Innovation Center for funding the study with a competitive university-wide seed award.

## **ABSTRACT**

**Objective:** Test feasibility and acceptability of a nutrition education and cooking program aimed at teaching parents and their preschool children positive eating behaviors.

**Design:** 10 month feasibility trial. Parents completed questionnaires at baseline, midway, and end of study.

**Setting:** Daycare situated in a disadvantaged urban neighborhood.

**Participants:** Convenience sample of preschool children and their parents (n=11).

**Main outcome measures:** Program feasibility (family attendance) and satisfaction (acceptability). Child food preparation skills and diet; parent self-efficacy regarding healthy food-related practices; family meal frequency.

**Analysis:** Attendance and program satisfaction calculated as percentages. Linear regression models developed for each outcome variable.

**Results:** 10 families completed the program. All parents reported being satisfied and that their children enjoyed the program. Children improved certain age-appropriate food preparation skills (rinse fruits/vegetables) and dietary outcomes (increased intake of fruits and vegetables; decreased intake of sugar sweetened beverages). Parent self-efficacy regarding healthy practices also improved (cut up vegetables in refrigerator; having child help prepare meals); family meals increased.

**Conclusions and Implications:** We demonstrated feasibility and acceptability of a day care-based nutrition education and cooking program. Findings have high relevancy as

there is need for innovative community-based strategies to encourage families with young children to improve diet quality.

## **INTRODUCTION**

While recent reports indicate that there has been a plateau in childhood obesity rates in the U.S., the number of obese children remains high, including the nation's young children (2-5 yr).<sup>1,2</sup> The long-term consequences of obesity are devastating, affecting both the physical and emotional well-being of the child. Childhood obesity increases the risk for adult obesity and negative health outcomes, including hypertension, cardiovascular disease, and type 2 diabetes.<sup>3</sup>

Eating behaviors that fuel childhood obesity are established early in life and become increasingly difficult to change thereafter.<sup>4</sup> Results from studies have shown that food attitudes and preferences are instilled by the time a child reaches kindergarten.<sup>5,6</sup> Parents play a major role in shaping the food choices and eating behaviors of their young children.<sup>7</sup> Key parent practices, such as role modeling and making healthy foods available, have been shown to directly impact a child's dietary intake.<sup>8</sup> Thus, in order to decrease the incidence of childhood obesity, early intervention of the child and engagement of parents is critical.

In 2007, the American Academy of Pediatrics (AAP) Expert Committee established core behaviors associated with a decreased risk for childhood obesity.<sup>9</sup> Among the many obesity preventing behaviors identified (e.g., encourage fruits and vegetables, limit sugar-sweetened beverages), eating meals as a family was emphasized. In one study, adolescents who participated in more than 3 weekly family meals were less likely to report inadequate fruit, vegetable, and dairy intake, and less likely to skip breakfast.<sup>10</sup> Results from some studies demonstrate that foods eaten outside the home are generally characterized as energy dense and nutrient poor.<sup>11</sup> Thus, participation in family meals prepared at home may provide a protective effect against inappropriate weight gain in children through reduced energy intake and improved diet quality.<sup>12</sup>

Unfortunately, many parents face multiple barriers to establishing positive eating behaviors for their young children, such as: lack of nutrition knowledge<sup>13</sup>, cooking/food preparation skills<sup>14</sup>, food acceptance and child control issues<sup>15</sup>, time and budget limitations<sup>5</sup>, and lack of social support.<sup>13</sup> To date, few efforts have been made to design evidence based nutrition education programs that equip parents of young children to overcome these barriers. The primary aim of this pilot study was to develop, implement, and test feasibility and acceptability of the Simple Suppers program, a combined nutrition education and food preparation/cooking program aimed at teaching parents and their preschool children positive food choices and eating behaviors delivered in the daycare setting. The secondary aim was to collect data for the design of a larger randomized controlled trial. Our working hypothesis was that children of families who participated in the program ( $\geq 75\%$  attendance) would demonstrate: improved food preparation skills; increased intake of fruits/vegetables and decreased intake of high-fat foods/high-sugar

foods and beverages. We further hypothesized that participating parents would show: improvements in self-efficacy in establishing healthy food and eating practices for their families and an increase in the frequency of family meals prepared and shared at home.

## **METHODS**

### **Formative Research**

A needs assessment was conducted prior to curriculum development in order to better understand the barriers that parents face in establishing regular family mealtime and topics of interest in a future proposed nutrition education and food preparation/cooking program for families. We recruited a convenience sample of parents with children enrolled at the Schoenbaum Family Center (SFC) daycare, a university-affiliated center that draws a mixed income, racially diverse population, located in a low-income urban neighborhood in Columbus, Ohio. Via a paper-based survey, parents were asked to respond to the following open-ended questions: 1) “What challenges do you face in preparing and eating family dinners at home?” and 2) “In the coming year, the center will be offering a monthly healthy cooking and nutrition class for SFC families. What topics and/or issues would you like to see addressed?”

### **Program Curriculum Development**

Results from this survey helped inform the design of an interactive, hands-on nutrition education and food preparation/cooking program for preschool children and their parents. Sessions (n=10) lasted 90 minutes each and included: nutrition education/activities and discussion (separate for children and parents); skill building in food preparation/cooking; family meal preparation; group meal; take-home educational

materials; and session evaluation. The Social Cognitive Theory (SCT) provided the conceptual framework for the program curriculum. SCT asserts that behavior is determined by a reciprocal relationship between personal and environmental factors.<sup>16</sup> Because this model applies better to older children and adults due to the cognitive nature of the constructs,<sup>17</sup> we utilized this theoretical framework with the understanding that the parent serves as the young child's 'agent of change.' To this end, our program was designed to focus primarily on addressing personal (e.g., skill building in food preparation and cooking; increasing self-efficacy in healthy eating habits for the family) and environmental (e.g., role modeling healthy eating behaviors; making healthy foods available) factors as they relate to the parent to achieve improvements in the diet of the child. We took "lessons learned" from two existing nutrition education programs in the design of our new curriculum: 1) Healthy Happy Preschoolers (HHP) and 2) the United States Department of Agriculture Expanded Food and Nutrition Education Program (EFNEP). HHP is a 6 week nutrition education program based on behaviors reinforced by the AAP<sup>9</sup> and designed to teach parents the skills required to provide their children with good nutrition and physical activity behaviors. Preliminary results from focus groups indicate that parents have positive perceptions of the program and have begun to implement certain positive dietary practices into their households.<sup>18</sup> EFNEP is a 6-8 week nutrition education program designed to assist limited-resource audiences with knowledge, skills, attitudes, and changes in behaviors necessary for nutritious diets. Data indicate that graduates have improved diets (increased protein, iron, calcium, vitamin A, vitamin C, and vitamin B6) and stretched their food dollars further.<sup>19</sup>

Each educational session in the Simple Suppers curriculum was assigned a topic with specific goals and activities (Table 1). The session topics and content were guided by the U.S. Dietary Guidelines for Americans<sup>20</sup> and AAP Expert Committee guidelines<sup>9</sup> and included: consuming *more* fruits and vegetables, whole grains, fat-free/low-fat dairy, and seafood and *less* sodium, saturated/trans fat, added sugars, and refined grains; eating breakfast daily; choosing healthy snacks; limiting portion sizes; and limiting eating out. Food preparation/cooking skill building included: reading nutrition labels; practicing food safety; planning meals; grocery shopping on a budget; engaging children in meal planning, grocery shopping, cooking, preparing meals; preparing family meals; chopping/tearing/mixing/stirring techniques; following recipes. Under the guidance of a local chef of a highly reputed restaurant, the following factors were taken into consideration when developing the meal plan/recipes for the cooking portion of the program: healthfulness ( $\leq 30\%$  energy from fat,  $\geq 1$  cup fruits and vegetables); cost per serving; time to prepare ( $\leq 30$  min); simplicity; palatability; acceptability to children; and seasonality of foods.

### **Program Implementation**

The program was delivered on a monthly basis over 10 months at the SFC daycare during the dinner hour by trained program staff (SFC preschool teachers, dietetic interns, undergraduate student researchers). All parents with children enrolled at SFC were invited to participate in the program. The retention plan included: reminder fliers posted at the center and phone calls to participants. Free babysitting for infants/toddlers was offered during the education piece of programming. Participating families received a bag of groceries with some of the non-perishable ingredients used in the recipes on the

night of programming. An educational brochure with key teaching points, recipes, and goal setting was developed for each session and distributed to parents at the end of the evening program. A program specific website was developed which allowed parents free access to program materials and other relevant resources.

### **Process Measures**

Program feasibility was evaluated using attendance data collected at each monthly session. Parent and child program acceptability was assessed using a satisfaction questionnaire at 3 time points throughout the study: baseline, midway (month 5), and end of study (month 10). On a 4-point Likert scale, from 'very unsatisfied' to 'very satisfied', parents were asked to rate their level of satisfaction with the program. Parents were also asked to report their child's satisfaction with the program (forced choice: 'yes', 'no', 'I am not sure'). A program specific fidelity tool was developed and utilized to gather implementation data of each session component for assuring intervention fidelity.

### **Study Design and Sample Recruitment**

This was a 10 month study (September 2011 through June 2012) based on a convenience sample of 2-5 year old preschool aged children and their parents. Inclusion criteria included: families with one or more preschool aged child(ren) enrolled at the SFC daycare. Parents of preschool aged children were verbally recruited for study participation at an SFC open house and via fliers posted at the center. The study protocol was approved by [REDACTED] Institutional Review Board.

### **Data collection**



Questionnaires were distributed to parents in the daycare prior to the onset of programming. Dietetic interns assisted parents in the completion of the questionnaires. On average, parents took 60-90 min to complete the questionnaires and were remunerated with gift cards at each study time point (baseline, 5 month, 10 month). All questionnaires were completed in English.

### **Measurements and Variables**

Child food preparation skills, age appropriate for 2-5 year olds<sup>21</sup>, were assessed with a 9-item survey modified from an existing questionnaire designed to assess a child's ability to engage in specific food preparation skills including: tear lettuce, rinse fruits and vegetables, add ingredients, stir ingredients, help assemble foods (e.g., pizza), peel fruits (e.g., orange, banana), help set the table, help measure ingredients, cut soft foods with a dull knife.<sup>22</sup> On a 5-point Likert scale, from 'strongly agree' to 'strongly disagree,' parents rated their level of agreement with statements related to their preschool aged child's food preparation skills (e.g., "My child is able to..."). Child diet was assessed with the Harvard Service Food Frequency Questionnaire, an 84-item survey designed to be completed by the parent or primary caretaker with demonstrated validity in assessing the diet of 1-5 year olds.<sup>23</sup> Parent self-efficacy to encourage healthy diet-related practices for their children was assessed with a 21-item questionnaire that assessed parent confidence to encourage fruit and vegetable consumption and make fruits and vegetables available for their children.<sup>24</sup> On a 3-point Likert scale, parents ranked their level of agreement with statements related to healthful dietary practices for their children (e.g., "On a regular schedule, how sure are you that you can..."). Family dinner frequency and source of foods, and other mealtime behaviors (arguments, TV watching) were measured

with a 13-item questionnaire.<sup>25, 26</sup> On a 5-point scale, parents reported the frequency of mealtime behaviors/practices (“Over the past 7 days, how many times...”).

## **Data Analysis**

Respondents reporting that they were satisfied or very satisfied with the program were grouped together to compute the average percentage of satisfied participants.

Average attendance over the course of the program was also calculated as a percentage.

One preschool aged child was randomly selected from each family for analysis of child outcomes. Summary variables were created to quantify the frequency with which a child consumed food in several categories. For example, the frequency dairy variable was created by summing frequency of milk, yogurt, and cheese consumption. Questions that addressed the frequency of diet-related outcomes were converted from the original ordinal values to corresponding approximate values for the number of times per day. Questions that addressed the frequency of family meal practices were converted from the original ordinal values to corresponding approximate values for weekly frequency.

Separate linear regression models were created for each variable. Each model included income level (defined as low or non-low based on participation in one or more nutrition assistance program), time period, child’s baseline age, and child’s baseline BMI percentile as independent variables, so the estimated marginal means for the response variable at each time point control for these potential confounders. To account for the repeated measures nature of the data, a random effect for family was included in the model where possible. For several models, the variance of the random effect was estimated to be zero, so it was removed from the final model. Effects with p-values less than 0.05 were considered important for subsequent investigation and discussion.

The purpose of the statistical analysis performed in this study was to identify variables potentially impacted by the intervention. The analyses (and associated p-values reported) are not intended to directly quantify the evidence against or evidence supporting any theoretical hypotheses; as such, they should not be interpreted literally. They are only included as a guideline for quantifying the strength of relationship between intervention and outcome. Formal statistical analysis to test hypotheses is not possible due to the convenience nature of the sample and the small size of the sample relative to the number of relationships being tested.

All statistical analyses were performed using SPSS software (IBM Corp., Armonk, NY, USA, 2010, version 19.0).

## **RESULTS**

Sixteen parents completed the formative evaluation. All parent respondents reported experiencing one or more barriers to establishing regular family meals, including time (69%) and lack of ideas (19%). When asked what topics they would like to see addressed in a future nutrition education and food preparation/cooking program, they indicated interest in learning: ways to prepare quick, healthy, affordable meals; how to involve their child in meal preparation; and recipes that appeal to children.

Eleven families enrolled in the Simple Suppers program and 10 completed the program (91% retention). The average attendance of consented families (at least one parent present with his/her child(ren)) at each session was 74% (range, 45-100%). At the midway and final time points, all parents reported being “satisfied” or “very satisfied” with their experience in the program. In addition, all parents reported that their children enjoyed the program.

Five family participants were classified as non-low income and 6 were low income defined as participation in one or more nutrition assistance program (Table 2). The majority (about 55%) of parents were between 31 and 40 years of age. All non-low income parent participants had achieved a 4-year college/advanced degree, while the majority of low-income parents had only achieved some college/technical school training or high school/less. Child participants were Asian (9%), Black (55%), Hispanic (9%), and non-Hispanic White (27%); almost all low income children were Black. Four children were between 1-2 years old and 7 were 3-4 years old. Sixty-four percent of the children were male.

Adjusted for baseline child age, baseline BMI percentile, and family income level, child's ability to rinse fruits and vegetables increased significantly from midway to final endpoint of study ( $p=0.04$ ) (Table 3). There was also an increase in the child's ability to assemble foods from baseline to the midway time point ( $p=0.06$ ). Adjusted for baseline child age, baseline BMI percentile, and family income level, child consumption of fruit and vegetables (excluding potatoes) increased from the midway to final time point ( $p=0.04$ ) and consumption of sugar sweetened beverages decreased from baseline to midway ( $p=0.04$ ) (Table 3). There was also a decrease in child consumption of added fat between the baseline and final time points ( $p=0.06$ ).

Parents were more confident that they could plan one vegetable for lunch and supper (baseline to final,  $p=0.02$ ), encourage their child to eat low fat food (baseline to final,  $p=0.02$ ), introduce a new vegetable on a monthly basis (baseline to final,  $p=0.007$ ), introduce a new vegetable weekly (baseline to midway,  $p=0.003$ ), keep cut up vegetables in the refrigerator (baseline to final,  $p=0.05$ ), and bake meats instead of frying them

(baseline to midway,  $p=0.02$ ) (Table 3). Between the baseline and final time points, parents were also more confident that they could have their child help prepare meals ( $p=0.03$ ). Finally, from baseline to the final time point, there was an increase in the number of dinners each week that families prepared at home and ate together ( $p=0.003$ ) (Table 3).

## **DISCUSSION**

Parents reported facing multiple barriers to achieving the behavioral goal of establishing regular meal time with their families – primarily, time constraints. This finding bears similarity to results from other studies of parents.<sup>26,27,28</sup> For example, in a recent focus group study of mixed race families, when participants were asked what challenges they face related to helping their young family members eat healthfully, they reported time constraints (e.g., parents' work hours, children's and adolescent's schedules, and having too many obligations) as one of the primary barriers.<sup>28</sup> In addition, when parents in the current study were asked what topics they would like to be addressed in a proposed nutrition education and food preparation/cooking program, they reported interest in learning: ways to prepare quick, healthy, affordable meals; how to involve their child in meal preparation; and recipes that appeal to children. This finding aligns with results from a recent study in which working parents of school-aged children reported their preferred ideas for potential obesity prevention programming to include: feeding tips/recipes, meal planning/preparation, and changing food offerings.<sup>27</sup> Taken together, these data suggest the importance of taking into consideration these inputs of parents in the design of community-based family nutrition education programming for maximum effectiveness.

We successfully recruited a racially/ethnically and socioeconomically diverse convenience sample of parents with young children (n=11 families) enrolled at a day care situated in a disadvantaged urban neighborhood that attracts a nearly equal blend of low and non-low income families. Findings from the present study demonstrate high feasibility (average attendance of consented families at each session was 74%) and acceptability (100% satisfaction rate) of our day care-based family nutrition education and food preparation/cooking program designed for delivery over the dinner hour. It has been purported that the commonalities among the relatively few successful obesity prevention efforts in this target age group include: a theoretical framework to the intervention; direct/indirect engagement of parents; multi-component strategies; documentation of behavior changes; follow up in clinic/community setting.<sup>29</sup> Based in part on this previous report, each of these factors was incorporated into the design of the Simple Suppers program; the positive results produced from this pilot test (high feasibility and program acceptability) provide additional evidence of the importance of inclusion these factors in successful community-based childhood obesity prevention programming. Benefits received from participation in the Simple Suppers program (a family meal, relaxed time with one's own family, social support from peer families) might also help explain the high sustained attendance rates.

It is important to restate that testing potential program efficacy was only a secondary aim of the current study due to the nature of the research (pilot test). Even so, because our long-term future goal is to design and conduct a randomized controlled trial utilizing data from the present study, we developed specific research questions and hypotheses with an accompanying evaluation plan that included: 1) specific outcomes

that held clear alignment with program goals and objectives (child food preparation skills; child diet; parent self-efficacy regarding healthy food/eating practices for child(ren)/families; family meals); 2) measures (validated/semi-validated survey tools); and 3) timeframe for data collection (baseline, mid-way (5 month), and final (10 month). That said, results from the current study infer potential efficacy of the Simple Suppers program. To this end, adjusted for potential confounders, child participants demonstrated improvements in certain age appropriate food preparation skills including: increased ability to 1) rinse fruits and vegetables and 2) assemble foods). This finding is of particular importance when considering the observation that acquiring of age appropriate food preparation skills may<sup>30</sup> serve as a way for overcoming the issue of food neophobia (unwillingness to eat novel foods) and food pickiness (unwillingness to eat many familiar foods) – characteristic traits observed in many preschool aged children<sup>31</sup> that may negatively affect vegetable consumption and overall diet quality.<sup>32</sup>

In addition, adjusted for potential confounders, child participants demonstrated certain improved dietary outcomes including: increased intake of fruits and vegetables combined; and decreased intake of 1) sugar sweetened beverages and 2) added fat. These findings bear some similarity to a recently published report<sup>22</sup> of a 3 month pilot test aimed at increasing quality of foods in the home and at family meals through engagement of parents and preadolescent children in a nutrition program that included skill building in cooking and was delivered in neighborhood community sites. Children randomized to the intervention group reported greater development of food preparation skills and marginally higher fruit and vegetable intake. While modest, taken together, these collective positive results indicate the importance of including a multi-component

approach (nutrition education and food preparation/cooking) with direct parent involvement in the design and delivery of effective childhood obesity prevention family community programming.

In the present study, we also observed improvements in parent participants' self-efficacy regarding healthy food and eating practices for their families, including the following: planning one vegetable for lunch and supper, encouraging their child to eat low fat food, introducing a new vegetable on a monthly or weekly basis, keeping cut up vegetables in the refrigerator, and baking meats instead of frying them, and having their child help prepare meals. Under the SCT, it is purported that self-efficacy or belief in one's capabilities to achieve a goal or an outcome, is one of the most important preconditions of behavior change.<sup>16</sup> Thus, according to SCT, results from the current study provide strong evidence of parent participants' readiness to establish positive changes in their food/eating practices -for their families. Of significance, the healthy food and eating parent practices targeted in the current study -have potential to directly impact the quality of child diet. For example, in a recent, large cross-sectional study, children whose parents reported routinely cutting up fruits and vegetables for their families consumed significantly more than those whose parents never cut up fruits and vegetables.<sup>33</sup> In another study, parents reported that involving their children in routines such as family meals was a key factor in helping them encourage the family to eat more healthfully.<sup>28</sup>

We also observed that parents who participated in the Simple Suppers program increased the frequency of family meals prepared and shared at home. This finding was of critical importance for establishing efficacy as our program curriculum was designed



with intentionality to promote family meals. As stated above, eating meals as a family was one of the core behaviors established by the AAP Expert Committee for decreased risk for childhood obesity.<sup>9</sup> The vast majority of the data in the peer-reviewed literature support the key role of the household routine of family meals in promoting a healthy diet and weight status in children.<sup>34</sup> Based on the literature, it can be hypothesized that the positive parenting practices that take place during family meals (e.g., role modeling intake of healthy foods, setting expectations for healthy food intake, and making healthy foods available) play a role in explaining the positive effect of family meal participation on child diet and weight status.<sup>26</sup>

Although numerous positive outcomes were observed in the current study, just as many program targets did not improve, or were impacted negatively. For example, there was a fairly substantial increase in the number of separate meals made for children (Table 3). Also, parents reported an increase in requests made by children to watch TV during dinner (Table 3); however, there was little change in the frequency with which children watched TV during dinner, suggesting that parents may have developed the skills to effectively deflect or overcome the child's request. Nevertheless, in future studies, modifications to the Simple Suppers curriculum need to be carefully considered and executed so that greater improvements (and prevention of declines) in primary outcomes are achieved. For example, an increased emphasis could be placed on developing practical strategies for parents when their child expresses food pickiness around mealtime and demands an alternative meal to what is being served other family members.

## **Limitations**

There are multiple limitations in the current study worth noting. First, even though the current study was purely exploratory in nature, a small sample size, weak study design (pre-, post-test), low program dose (monthly), and lack of control group, individually and collectively may be considered major limitations. In addition, for numerous study outcomes, a ceiling effect was observed. This limitation should be addressed in future studies by considering alternative surveys that allow for a greater range of scale to effectively capture improvements resulting from program participation. Another weakness of the current study is that the online activity of the program website was not monitored. Future studies should assess this electronic outcome as determining the impact of exposure to program messages outside of the monthly session on participants' target behaviors is critical in establishing program efficacy.

Although the importance of early intervention and engagement of parents through community-based programs are becoming appreciated as necessary components of strategies for childhood obesity prevention, few published approaches have resulted in efficacious control of obesity in the first 5yr of life.<sup>29,35</sup> In summary, findings from the present study demonstrate high feasibility (attendance) and acceptability (program satisfaction) of a day care-based nutrition education and food preparation/cooking program delivered over the dinner hour to a racially/ethnically and socioeconomically diverse audience of parents and young children. Results from the current study also point to the potential efficacy of the Simple Suppers program. To this end, adjusted for potential confounders, child participants demonstrated improvements in certain age appropriate food preparation skills. In addition, parent participants' self-efficacy regarding healthy food/eating practices for child(ren)/families improved. And parent participants

increased the number of family meals prepared/shared at home. Collectively, the findings generated from this pilot test have high relevancy as the need remains high for innovative community-based strategies to support and encourage families with young children to improve the overall diet quality of children for reduced risk of obesity.

## **REFERENCES**

1. Robert Wood Johnson Foundation. Declining childhood obesity rates- where are we seeing the most progress? Available at [http://www.rwjf.org/content/dam/farm/reports/issue\\_briefs/2012/rwjf401163](http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2012/rwjf401163). Accessed December 11, 2012.
2. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of Obesity and Trends in Body Mass Index Among US Children and Adolescents, 1999-2010. *JAMA*. 2012; 307: 483-490.
3. Daniels SR, Jacobson MS, McCrindle BW, Eckel RH, Sanner BM. American Heart Association Childhood Obesity Research Summit Report. *Circulation*. 2009; 119:e489-517.
4. Devaney B, Ziegler P, Pac S, Karwe V, Barr SI. Nutrient intakes of infants and toddlers. *J Am Diet Assoc*. 2004; 104:S14–21.
5. Dwyer J, Needham L, Simpson JR, Heeney ES. Parents report intrapersonal, interpersonal, and environmental barriers to supporting healthy eating and physical activity among their preschoolers. *Appl Physiol Nutr Metab*. 2008; 33:338-346.

6. Birch LL. Development of food acceptance patterns. *Developmental Psychology*. 1990; 26:515-519.
7. Kral TV, Rauh EM. Eating behaviors of children in the context of their family environment. *Physiol Behav*. 2010; 100:567-573.
8. Savage JS, Fisher JO, Birch LL. Parental influence on eating behavior: conception to adolescence. *J Law Med Ethics*. 2007; 35:22-34.
9. Barlow SE. Expert committee recommendation regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. *Pediatrics*. 2007; 120:S164-192.
10. Videon TM, Manning CK. Influences on adolescent eating patterns: the importance of family meals. *Journal of Adolesc Health*. 2003; 32.5:365-373.
11. Guthrie JF, Lin BH, Frazao E. Role of food prepared away from home in the American diet, 1977-78 versus 1994-96: changes and consequences. *J Nutr Educ Behav*. 2002; 34:140-150.
12. Gillman MW, Rifas-Shiman SL, Frazier AL, Rockett HR, Cambargo CA Jr, Field AE, Berkey CS, Colditz GA. Family dinner night and diet quality among older children and adolescents. *Arch Fam Med*. 2000; 9:235-240.
13. Birkett D, Johnson D, Thompson JR, Oberg D. Reaching low-income families: focus group results provide direction for a behavioral approach to WIC services. *J Am Diet Assoc*. 2004; 104:1277-1280.

14. Chenhall C. Improving cooking and food preparation skills: a synthesis of the evidence to inform program and policy development. Available at [http://www.hc-sc.gc.ca/fn-an/alt\\_formats/pdf/nutrition/child-enfant/cfps-acc-profil-apercu-eng.pdf](http://www.hc-sc.gc.ca/fn-an/alt_formats/pdf/nutrition/child-enfant/cfps-acc-profil-apercu-eng.pdf). Accessed February 1, 2011.
15. Hoerr S, Utech AE, Ruth E. Child control of food choices in Head Start families. *J Nutr Educ Behav*. 2005; 37:185-190.
16. McAlister AL, Perry CL, Parcel GS. How Individuals, Environments, and Health Behaviors Interact: Social Cognitive Theory. In: Glanz K, Rimer BK, Viswanath K, eds. *Health Behavior and Health Education. Theory, Research and Practice*. 4th ed. San Francisco, CA: Jossey-Bass Publishers; 2008. 169-185.
17. Baranowski T, Cullen K, Baranowski J. Psychosocial correlates of dietary intake. *Ann Rev Nutr*. 1999; 19: 17–40.
18. Pennywitt J, Murray R, Failla ML, Gunther CW. Happy Healthy Preschoolers. USDA Annual Project Directors Meeting, Washington, DC, October 2009.
19. Montgomery, S, Willis, W. EFNEP- Expanded Food and Nutrition Education Program 2004 National Impact Data. Available at: [http://www.csrees.usda.gov/nea/food/efnep/pdf/2004\\_impact.pdf](http://www.csrees.usda.gov/nea/food/efnep/pdf/2004_impact.pdf). Accessed July 27, 2012.
20. US Department of Agriculture and US Department of Health and Human Services. Dietary Guidelines for Americans, 2010. 7th Edition, Washington, DC: U.S. Government

Printing Office, December 2010. Available at: <http://www.dietaryguidelines.gov>.

Accessed February 1, 2011.

21. US Department of Agriculture. Picky Eating. Available at:

<http://www.choosemyplate.gov/preschoolers/picky-eaters/kitchen-activities.html>.

Accessed December 4, 2012.

22. Fulkerson JA, Rydell S, Kubik MY, Lytle L, Boutelle K, Story M, Neumark-Sztainer D, Dudovitz B, Garwick A. Healthy Home Offerings via the Mealtime Environment (HOME): Feasibility, acceptability, and outcomes of a pilot study. *Obesity (Silver Spring)*. 2010; 18: S69–S74.

23. Blum RE, Wei EK, Rockett HRH, Langeliers JD, Leppert J, Gardner JD, Colditz GA. Validation of a Food Frequency Questionnaire in Native American and Caucasian Children 1 to 5 Years of Age. *Maternal and Child Health Journal*. 1999; 3:167–172.

24. Cullen KW, Baranowski T, Rittenberry L, Cosart C, Owens E, Hebert D, and De Moor C. Socioenvironmental influences on children's fruit, juice and vegetable consumption as reported by parents: reliability and validity of measures. *Public Health Nutrition*. 2000; 3: 345–356.

25. Fulkerson JA, Story M, Neumark-Sztainer D, Rydell S. Family meals: Perceptions of benefits and challenges among parents of 8- to 10-year-old children. *J Am Diet Assoc*. 2008; 108:706-709.

26. Fulkerson JA, Neumark-Sztainer D, Story M. Adolescent and parent views of family meals. *J Am Diet Assoc.* 2006; 106:526-532.
27. Fulkerson JA, Kubik MY, Rydell S, Boutelle KN, Garwick A, Story M, Neumark D, Dudovitz B. Focus groups with working parents of school-aged children: what's needed to improve family meals? *J Nutr Educ Behav.* 2011; 43: 189-193.
28. Berge JM, Arikian A, Doherty WJ, Neumark-Sztainer D. Healthful eating and physical activity in the home environment: results from multifamily focus groups. *J Nutr Educ Behav.* 2012; 44:123-131.
29. Bluford DA, Sherry B, Scanlon KS. Interventions to prevent or treat obesity in preschool children: a review of the evaluated programs. *Obesity (Silver Spring).* 2007; 15:1356-1372.
30. US Department of Agriculture. Nutrition Education for Preschool Children. Available at:  
[http://www.csrees.usda.gov/nea/food/pdfs/roundtable\\_references\\_preschool.pdf](http://www.csrees.usda.gov/nea/food/pdfs/roundtable_references_preschool.pdf). Accessed January 3, 2013.
31. Birch LL. Development of food acceptance patterns in the first years of life. *Proceedings of the Nutrition Society.* 1998; 57:617-624.
32. Galloway AT, Lee Y, Birch LL. Predictors and consequences of food neophobia and pickiness in young girls. *J Am Diet Assoc.* 2003; 103:692-698.

33. Christian MS, Evans CEL, Nancock N, Nykjaer C, Cade JE. Family meals can help children reach their 5 A Day: a cross-sectional survey of children's dietary intake from London primary schools. *J Epidemiol Community Health* 2012; Epub ahead of print.
34. Taveras EM, McDonald J, O'Brien A, Haines J, Sherry B, Bottino CJ, Troncoso K, Schmidt ME, Koziol R. Healthy Habits, Happy Homes: methods and baseline data of a randomized controlled trial to improve household routines for obesity prevention. *Prev Med.* 2012; 55:418-426.
35. Nixon CA, Moore HJ, Douthwaite W, Gibson EL, Vogele C, Kreichauf S, Wildgruber A, Manios Y, Summerbell CD. Identifying effective behavioural models and behaviour change strategies underpinning preschool- and school-based obesity prevention interventions aimed at 4-6-year-olds: a systematic review. *Obesity Reviews.*2012; 13: 106-117.