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Reducing the Prevalence of Childhood Obesity in Households Receiving Supplement Nutrition Assistance Program Benefits in Baltimore City, Maryland through Interactive Nutrition Education

Raenetta L. Ellison, JD, MPH*

INTRODUCTION

Childhood obesity is a public health problem that disproportionately affects children in low-income families. Obesity is a condition characterized by excessive fat on the body that can cause serious health implications.\(^1\) Approximately 17% of children in the United States are obese.\(^2\) Health professionals use the body mass index (BMI) calculation to determine if a child is obese. A high BMI is indicative of high body fat, with obesity characterized as having the highest range of body fat.\(^3\)

Because weights and heights of children change frequently during growth and development in relation to body fat, a child’s BMI is an interpretation relative to other children of the same sex and age.\(^4\) Therefore, researchers use percentiles to express BMI for children. These percentiles are standardized percentages that indicate the value

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\(^4\) Id.
above or below which a given range of body fat occurs. A group of experts recommends
the percentiles for a given area of health under study. A child aged two through nineteen
years old is obese when his or her BMI is above the 95th percentile.5

Obese children suffer from immediate and delayed health problems.6 For example,
children may initially suffer only from sleep apnea and respiratory problems.7 Some of
these early problems persist into adulthood, becoming long-term issues. Obese children
tend to become obese adults, which can lead to other chronic conditions in adulthood.
For instance, the persistence of obesity from childhood into adulthood is a precursor for
the onset of hypertension, cardiovascular disease, cancer, bone disease, and early death.8

A significant amount of research finds that the prevalence of obesity among children
ages two to nineteen directly correlates with the race and ethnicity of the households
where the children reside.9 According to the Centers for Disease Control and Prevention
(CDC), the presence of obesity is greatest among children who belong to households at
or below the poverty level.10

Similarly, some focus group studies show that children in low-income households tend
to ingest unhealthy foods because of many barriers.11 Ingestion of unhealthy foods,
such as processed items and foods high in sugar, contributes to the high prevalence
of childhood obesity.12 Fortunately, obesity is a disease with well-recognized causes.
Therefore, communities have the opportunity to employ creative and far-reaching
strategies to improve health behaviors in children.13 Otherwise, individuals and society
will sustain high economic costs from the growing presence of childhood obesity.
According to research published in the American Journal of Community Psychology, “a
recent estimate projects that obesity will account for more than 16% of all health care
expenditures by 2030.”14

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5 Div. of Nutrition, Physical Activity, Overweight and Obesity, Defining Childhood Obesity, CDC
6 Div. of Nutrition, Physical Activity, Overweight and Obesity, Childhood Obesity Causes &
7 Id.
8 Id.
9 Natl. Ctr. for Health Statistics, Prevalence of Obesity Among Adults and Youth: U.S., 2011 -2014,
CDC (Nov. 2015), page 4.
10 CDC, supra note 2.
11 Ann M. Davis et al., The Nutrition Needs of Low-Income Families Living Healthier Lifestyles:
12 Lindsay A. Heidelberger and Chery Smith, A Child’s Viewpoint: Determinants of Food
Choice and Definition of Health in Low-Income 8- to 13-year Old Children in Urban Minnesota
Communities, 9 J. HUNGR & ENVTL. NUTRITION 388, 389 (2014).
13 Leslie A. Lyle, Examining the Etiology of Childhood Obesity: The IDEA Study, 44 AM. J.
COMMUNITY PSYCHOL. 338 (2009).
14 Id.
This paper discusses one conceptual intervention, the Curbside Cookhouse program. This potential program is an innovative and targeted strategy to address childhood obesity among children living in Baltimore City households who receive Supplemental Nutrition Assistance Program (SNAP) benefits. The high prevalence of obesity among children residing in Baltimore City highlights the need for effective interventions within the city. The 2013 Baltimore Youth Risk Behavior Survey revealed that 17% of Baltimore City’s high-school-aged children were obese.\(^{15}\) In the Baltimore City Community Health Survey 2014: Summary Results Report, 32% of the adult respondents, who were residents of Baltimore City, reported themselves as obese.\(^{16}\)

While the Curbside Cookhouse program targets SNAP households, the program is easily adaptable to any low-income subpopulation. Many households eligible for the receipt of SNAP benefits have not applied for assistance even though they face exactly the same challenges of SNAP households.\(^{17}\) Therefore, this program can be beneficial to all low-income households. The Curbside Cookhouse program will provide live, interactive nutrition education and cooking classes in Baltimore City neighborhoods with a high concentration of households receiving SNAP benefits. Providing convenient access to the program within various communities in Baltimore City removes resource barriers such as travel and childcare costs that may otherwise prevent residents from participating. The goal of the program is to educate parents and children on healthy and timesaving meal preparation strategies, and empower them to apply the learned techniques regularly at home.

Successful implementation of this program requires accompanying legal interventions. This paper discusses how indirect legal regulations can effectively aid in the implementation of the Curbside Cookhouse program and help reduce childhood obesity in Baltimore City.


I. BACKGROUND ON TARGET POPULATION

In the United States, nearly one-third of 3.7 million low-income children are obese before they reach the age five.\(^\text{18}\) There were 203,153 SNAP participants from Baltimore City in February 2015, constituting the largest number of recipients among counties in Maryland.\(^\text{19}\) Although studies do not definitively conclude that there is direct association between living in a SNAP-receiving household and childhood obesity, some studies suggest there is a link.\(^\text{20}\)

To support these conclusions, the National Longitudinal Survey of Youth assessed how access to SNAP benefits impacted childhood obesity in a 1979 cohort of youth.\(^\text{21}\) The cohort included 12,686 respondents between the ages of 14 and 21. Researchers recorded the weights of respondents between 1981 and 2000. The results showed that rates of childhood obesity increased when a child’s household participated in the food stamp program, which was the predecessor to the SNAP benefit program. For example, 28.1% of children from food stamp recipient households were obese, while 17.5% of children from non-SNAP households were obese.\(^\text{22}\)

Another study conducted by the United States Department of Agriculture (USDA) that examined data from the National Nutrition Examination Survey showed more insight into the diets of SNAP child beneficiaries. The study found that children from SNAP households were more likely to consume higher amounts of saturated fat and sugary drinks than children who live in non-SNAP households. Conversely, they consumed fewer pure fruit juice beverages and vegetables.\(^\text{23}\) Although both SNAP and non-SNAP participating children had diet qualities below the dietary guidelines for Americans, SNAP participants fell much shorter of the recognized dietary goals than non-SNAP participants did.\(^\text{24}\)

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21 Id. at 625-26.
22 Id. at 644.
24 Id.
II. CAUSAL PATHWAYS FOR CHILDHOOD OBESITY IN LOW-INCOME ENVIRONMENTS

While the dominant cause of obesity is an excessive intake of calories in relation to the amount of calories expended, other factors influence the occurrence of obesity through many pathways. Genetic, behavioral, environmental, and social determinants are among the contributors to obesity. However, genetic determinants address the propensity of a person to store fat, and do not affect significantly the widespread increase in obesity. For example, although genetic mutations can lead to severe obesity, genetic determinants are not the leading cause of the global obesity epidemic.

With childhood obesity levels continuing to remain at alarming levels, the focus of reducing the prevalence of childhood obesity centers on environmental and social determinants. Using these determinants will assist in understanding the effect of physical environment on the dietary health of children. Consequently, these impacts allow the communities who are interested in reducing obesity in low-income children to construct feasible and sustainable interventions.

Figure 1 illustrates the effects of environmental and social influences on a child's eating habits. Causal pathways exist within these determinants that map out the events that lead to childhood obesity. Multiple sites for intervention exist in the childhood obesity causal pathway. By intervening, the causal chain breaks, which creates an opportunity to reduce childhood obesity. On an individual level, a child (with the aid of a parent or caretaker) can resolve his or her obese condition through healthy eating habits and increased physical activity.

Unlike adults, children live in environments chosen by their parents or caregivers. Children often have little to no choice in the decision of where to live or what foods they may consume. Furthermore, children have a limited understanding of nutrition and the long-term impacts of poor nutrition and eating habits. Consequently, parents play a vital role in shaping the nutritional values and behaviors of their children.

To assist parents in improving the eating habits of their children, it is necessary to address unfavorable neighborhood determinants. Because the parent or caregiver’s decisions are results of their environment, changes promoting healthy environments will directly affect their children. In low-income neighborhoods, the food environment is especially important in shaping the eating habits and weight status among both children and adults.

Additionally, population-level changes in a child’s environment play a vital role in helping the child reduce his or her obese status. Exposing children to an environment supportive of a healthy lifestyle makes them more likely to make better choices. According to the World Health Organization (WHO), “individual responsibility can have its full effect where people have access to a healthy lifestyle.” Thus, people are more likely to engage in beneficial behaviors when the environment is conducive to such change. For this reason, the WHO recommends that, at the population level, community leaders,
businesses, and members collaborate to sustain political commitment to promoting healthy living and to help make such a lifestyle more accessible.\textsuperscript{32}

Therefore, an obesity-reducing intervention targeting the social and physical environments of children is a critical component in reducing obesity among them. According to Figure 1, a child's family has the most significant and direct influence on his or her eating habits. Because caregiving dynamics are closely associated with a child's behavior, an intervention aimed at both the caregiver and child, as opposed to the child alone, would be more effective in reducing childhood obesity. For these reasons, a socio-ecological model approach is likely the most effective way to address the multiple causal pathways that lead to childhood obesity. This model fosters a collaborative approach for communities in developing innovative and targeted interventions.

\textbf{Figure 2: Causal pathway relations for childhood obesity. (Adapted M. S. Jalali et al., Social Influence in Childhood Obesity Interventions: A Systematic Review (to appear in Obesity)).}

\textsuperscript{32} Id.
III. FRAMEWORK FOR MULTI-LAYERED INTERVENTION STRATEGIES

Based on the extensive causal pathway schematic in Figure 2, it is essential to address childhood obesity with a multi-faceted approach. The best approach for preventing childhood obesity is to address the individual, interpersonal, community, and government-level influences. The WHO recognizes that the problem of childhood obesity is societal, thereby demanding a multi-level approach. With a wide-range of factors causing childhood obesity, opportunities exist for several strategies with a single intervention.

Curbside Cookhouse includes a multi-layered approach with the aim of reducing childhood obesity through education and eating behavior. Through education, this program will inform parents about both healthy nutrition and meal preparation so that they can save time and feel confident about preparing nutritious meals. Children will observe the behavior of their parents and modify their own eating habits to mimic those of their parents. Through modeling, parents can improve both their own eating habits and those of their children.

Moreover, a secondary goal of the program is to motivate parents to participate actively in improving their child’s eating habits. Through positive modeling of healthy eating habits, parents can create a healthy home environment. In Figure 2, the large blue arrows, starting with parental behavior, follow the path of the intervention sites that the Curbside Cookhouse program focuses on to reduce childhood obesity. Likewise, Figure 3 depicts the framework of how the individual, social, and policy determinants of childhood obesity interact. Curbside Cookhouse addresses the same determinants in its intervention. As shown in Figure 3, food preparation methods are just as important as the location of the food source and the behaviors involved in obtaining the food.

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33 See Lytle, supra note 13.
34 WHO, supra note 1.
Figure 3: Conceptual framework to understand the relationship between consumer food-related behaviors, household food insecurity and excess body weight. (Gabriella M. Vedovato, et al., Food insecurity, overweight and obesity among low-income African-American families in Baltimore City: associations with food-related perceptions, 19(8) Public Health Nutrition 1405, 1409 (2015)).

IV. THE INTERVENTION: CURBSIDE COOKHOUSE PROGRAM

A. Rationale

Curbside Cookhouse, a mobile or “pop-up” kitchen program, is a proposed multi-layered idea designed to address the nutritional needs and environmental challenges of low-income families with children who are obese, or at a high risk of becoming obese. Transportation to nutrition classes, and the costs associated with transportation, are barriers preventing parents from participating in educational programs not offered in close proximity to where they reside. Curbside Cookhouse alleviates the transportation burden by making nutrition education conveniently accessible.

Parents who participated in other nutrition education programs cited that transportation was a major barrier to their participation. Although parents wanted to be involved, the travel to some sites made it difficult or impossible for them to participate. In an effort to make it easier for parents and caregivers to participate in nutritional programs, Curbside Cookhouse will bring nutritional programming to various locations within low-income communities to limit the transportation barrier. The program will utilize schools, recreation centers, and other neighborhood venues to host Curbside Cookhouse programming.

35 See Wendelin Slusser et al., Challenges to Parent Nutrition Education: A Qualitative Study of Parents of Urban Children Attending Low-Income Schools, 14 PUB. HEALTH NUTRITION 1833, 1834 (2011); see also Rose, supra note 32, at 147, Davis, supra note 11, at 56-58.
The design of the Curbside Cookhouse program positions itself for implementation as a convenient nutrition education program for both parents and children. The goal of the program is to increase parent and child knowledge about what qualifies as healthy foods, and how to prepare food in a healthy manner. Additionally, the nutrition curriculum will provide participants with timesaving cooking methods and food storage tips.

The program name, Curbside Cookhouse, signals that the program aims to address the transportation needs of the community by making travel to the classes convenient. The transient nature of the program will allow it to be successful in reaching the targeted population. Additionally, this type of program delivery may illustrate more seriously the commitment to improving access to nutrition resources. The locations will rotate throughout neighborhoods with a high density of households receiving SNAP benefits. Currently, few nutritional programs equip parents with education on positive eating habits and food preparation skills.36

B. Curriculum Design

The Curbside Cookhouse program will consist of two weekly sessions with classes offered on both a weekday and a weekend. Each class will last 90 minutes. The first 30 minutes will consist primarily of lecture-style instruction, and the next 15 minutes will focus on the preparation stage of the cooking demonstration (i.e., measuring, slicing, and pre-heating). Next, the participants will spend 30 minutes cooking the meal. During this time, participants may also learn tips to initiate the cleanup and storage process while the food cooks. For instance, if food items are baking, participants will learn how to pack leftovers for easy storage and reheating, or how to pack for the next day’s lunch. The program will allocate the final 15 minutes to families eating the meals they prepared. The program will provide families with the recipes and ingredients used in the meal preparation to take home for replication. Program staff will record each session and post it on the program’s website. DVDs of each session will be available to households without Internet access.

The program will utilize literature published by health scientists, nutrition experts, health organizations, and agencies to develop the curriculum content and core competencies. The core competencies will be the specific information and skills that Curbside Cookhouse will deliver to its participants. Additionally, Curbside Cookhouse will collaborate with local nutritionists, restaurant chefs, and culinary school instructors to incorporate local culinary practices and flavors into the curriculum. Curbside Cookhouse will solicit these same partners to serve as instructors in the program. They will also make meals suitable for low-income families, including easy-to-find and low-cost ingredients.

Each class session will cover a specific topic that incorporates acquiring knowledge, building cooking skills, reading nutrition labels, analyzing nutrition label content, and planning meals. The team designing the curriculum will also establish content

36 Angela M. Rose, Determining the Feasibility and Acceptability of a Nutrition Educ. and Cooking Program for Preschoolers and their Families Delivered Over the Dinner Hour in a Low-Income Day Care Setting, 6 INFANT, CHILD, ADOLESCENT NUTRITION 144, 145 (2014).
parameters for meals. For instance, if the USDA recommends that a child’s average daily fat intake remain under 30%, the design of the meals will adhere to this guideline. While meeting the USDA recommended nutritional standards, Curbside Cookhouse will plan meals with the help of local chefs to ensure meals are delicious and healthy. The class facilitator will encourage participants to talk about their current cooking experience and future cooking goals. Furthermore, participants will receive handouts on the nutrition topics presented during the lecture.

Curbside Cookhouse considers parents and children as a single-family unit, and each unit will have their own workstation. Each class will consist of no more than 15 workstations. The program will initially limit the class to 15 units to reserve the capacity to accommodate large families. For example, the program would like to accommodate single and two-parent households, as well as households with multiple children. Curbside Cookhouse’s goal is to educate the immediate family in order to foster a family bonding experience. Each workstation will have the basic cooking tools including a double burner, mixing bowls, measuring cups, cutting board, knives, etc. Additional tables will be set up away from the workstations, providing a separate area where families will eat the prepared meals.

C. Advertisement

Curbside Cookhouse will post the topics for each class on the program’s website, and on fliers circulated in key areas of the community. The Internet, community posting platforms, and public assistance agencies will be the primary sources for advertising the program. Interested families can sign-up for the class online or by telephone. Curbside Cookhouse will work specifically with local social service offices to recruit eligible participants.

D. Incentives

At the end of the program, each family unit will take home all of the ingredients used to prepare the meal so that they can replicate what they learned at home. Curbside Cookhouse will portion the ingredients by the size of the family unit that participated in the class. Additionally, Curbside Cookhouse will enter each family unit into a monthly drawing for a monthly gift certificate to a grocery retailer. Curbside Cookhouse hopes to provide gift certificates for a value of at least $100 as the drawing prize.

For vendors (e.g., grocers, retailers) that provide food and supplies, Curbside Cookhouse will work with the local government to encourage the modification of laws in order to provide them with additional tax credits and deduction for their in-kind services and donations. Second, Curbside Cookhouse will also reward these businesses by promoting them during the class and on the program’s website.

E. Evaluation

One parent from each family unit must complete a satisfaction survey before he or she receives the take-home ingredients. The survey tool will be electronic, and participants will input their responses using an electronic tablet device. The survey will ask questions about various aspects of the Curbside Cookhouse program, including: length of the class, convenience of the class, topics covered in class, skills before and after the...
class, knowledge before and after the class, enjoyment of the class, effectiveness and ease of the demonstrations, lecture content and style, and taste of the food. Curbside Cookhouse will use the results of the evaluation to tailor the subsequent cycle of classes within the program.

Approximately one month after a participant completes the class, the Curbside Cookhouse staff will follow-up with the participant to ascertain feedback on the meal that the family prepared at home using the take-home ingredients. Those persons who complete the second survey will receive a $15 gift card to a local food retailer, preferably from a program vendor. Curbside Cookhouse will pay the cost of the gift card from its budget.

F. Program Benefits

Curbside Cookhouse is a beneficial intervention strategy because it addresses several needs of the target population. By directly tackling the transportation barrier, the negative taste perception associated with healthy foods, and parents’ desire for an engaging family-oriented nutrition education program, Curbside Cookhouse confronts several of the factors that underlie childhood obesity in low-income populations.

First, the hallmark of the Curbside Cookhouse program is its mobility. By bringing the nutrition and cooking classes directly to the target communities, the program reduces the cost and travel barriers affecting low-income families. This allows for greater engagement of parents since they can easily participate in an activity with their child, which may otherwise be unfeasible. Low-income women in other nutrition education settings expressed that they do not have their own cars and rely on public transportation.37 Addressing this barrier shows the program’s commitment to having parents involved with their child’s nutritional education.

Second, a review of the literature shows that the taste of the food is an important factor in how low-income consumers perceive food. For example, in a study conducted by Karen Glanz, which examined factors that contribute to why Americans eat certain foods, taste was the most important consideration.38 Likewise, in focus groups conducted by researchers from Ohio State University, parents recommended that recipes used in future nutrition education and cooking classes be more flavorful.39 The same theme appeared in a study conducted in Baltimore City. This study evaluated environmental impacts on the eating habits of low-income adolescents in Baltimore City, and found that they often buy “goodies” at the corner stores after school.40 The adolescents reasoned that they did not find their lunch at school appealing, so they purchased “goodies” after school.41 Therefore, it is important for Curbside Cookhouse to meet the program goals and core

39 Rose, supra note 36, at 147.
40 Christiansen, supra note 28, at 655.
41 Id.
competencies without compromising the taste of the food. Collaborating with the local chefs to ensure the food tastes delicious while maintaining its healthfulness is vital to the program’s success.

Third, the data shows that cooking is an effective way to engage parents and children simultaneously. In a recent study, parents explained that they exhibited more confidence in making healthy cooking decisions as early as the midway point of the study. There was also an increase in the number of dinners the families prepared at home. Some Baltimore adolescents expressed their attitudes on cooking in another study. Students reported that although they purchased and prepared their own food, the foods were usually comprised of unhealthy items. In the article, 79% of Baltimore students ages nine to fifteen reported that they cook, and 87% of them reported that they cook with family.

Another benefit of the program is the opportunity for families to build stronger bonds. By participating in the program, families save money on at least one meal using the take-home ingredients. The reciprocal benefit is allowing the community-at-large to invest in children already experiencing or at risk of obesity. Collectively, these outcomes are significant in preventing childhood obesity and positively affecting the collateral health and economic effects within the community.

V. SIGNIFICANCE OF TARGETED NUTRITION EDUCATION IN REDUCING CHILDHOOD OBESITY IN LOW-INCOME HOUSEHOLDS

In 1981, SNAP started its official nutrition education program following Congress’s passage of the Food Stamp Act of 1977. The purpose of the legislation was to encourage the purchase of nutritious foods. State agencies responsible for administering SNAP could apply for matching funds from the US Department of Agriculture (USDA) to implement nutrition education programs. The USDA allowed states to hire subcontractors to implement the education initiatives. These efforts alone failed to impede the growth of childhood obesity. Although there is more emphasis on SNAP households eating healthier food, nutrient needs in the diets of children remain unmet.

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42 Rose, supra note 37, at 147.
43 Id.
44 Melissa Sattler et al., Characteristics of Youth Food Preparation in Low-Income African American Homes, 54 ECOLOGY OF FOOD AND NUTRITION 380, 381 (2015).
46 Id.
47 Id.
48 Id. at 1950.
49 Cindy W. Leung et al., Assoc. of Food Stamp Participation with Dietary Quality and Obesity in Children, 131 J. PEDIATRICS 463, 471 (2013).
Currently, state participation in the SNAP nutrition education program is optional. Therefore, some SNAP benefit recipients receive benefits without participating in any nutritional education and counseling. Under the optional component of SNAP, states may tailor the educational program as they see fit. In states that offer nutrition education as a component of administering SNAP benefits, the education is not mandated. Inconsistency between SNAP education programs and the failure to mandate education likely contribute to the unmet nutritional needs of children. In states with SNAP educational programs, there are several additional reasons that nutrition education initiatives are not sufficient in helping the recipients meet their nutrient needs adequately.

Healthy food perceptions and food preparation may be the reasons that low-income families do not find improvements from existing nutrition education initiatives. Scientists have undertaken efforts to assess the food perception and preparation methods of low-income families. The National Health and Nutrition Examination Survey (NHANES) is a national representative, cross-sectional data set collected by the National Center for Health Statistics; the survey is one source used by scientists to analyze food intake. In a secondary analysis of the NHANES conducted over a one-year period, researchers noted that interventions seeking to reduce obesity are shifting their focus. Interventions attempt to understand how households prepare foods at home, and what factors they consider in choosing to prepare home cooked meals.

The results show that low-income families either consistently cook at home or never cook at home. This conclusion illustrates the two extreme positions that exist within the low-income population. The cooking pattern represents the idea that cooking at home is a forced option for low-income families. Households with greater income and education displayed more variance in their cooking patterns because they chose to eat meals cooked outside of the home several nights a week. The cooking patterns among low-income families show an association with the barriers these households face. Previous studies show that time is a significant barrier that prevents many low-income households from cooking at home. On the other hand, the value of time may be lower than the value of money in households that always cook at home. Thus, if money is limited, cooking at home is more feasible even though it requires more time than eating outside the home. This highlights the importance of educating parents and children about quick preparation of healthy meals.

Likewise, several focus group studies conducted with low-income parents in various urban settings confirm the importance of teaching parents and caregivers to cook healthy, appetizing, and convenient (timesaving) meals. A review of data from three different studies displayed three consistent themes: parents wanted to know how

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51 Virudachalam et al., infra note 52, at 1023.
52 Senbagam Virudachalam et al., Prevalence and Patterns of Cooking Dinner at Home in the USA, 17 PUB. HEALTH NUTRITION 1022, 1029 (2013).
53 Id. at 1029.
54 Id. at 1028.
55 Id.
to (1) make food healthier, (2) prepare meals faster, and (3) create dishes that taste good. The following direct quotes from different participants in a study published by the Journal of Child Health Care support the theme that participants lacked general knowledge about nutrition:

1. I don’t know how good we eat.
2. I love corn. Is corn a vegetable?
3. Like they say guidelines is three to whatever, how may servings of vegetables and fruits a day. Momma say that’s too much.
4. If I had somebody tell me about which foods were good, you know, then I would be better.

These comments underscore the need for more nutrition education among low-income parents and caregivers. According to a case study on engaging parents in childhood obesity programs, “A growing body of research and relevant theory emphasize the importance of utilizing parents as change agents in childhood obesity prevention.” Since children model the behavior of their parents, who control their food availability, parental nutrition education is just as critical as that of children.

Next, a qualitative study conducted with low-income African-American Baltimore City adolescents analyzed their eating behaviors and found that the home environment is central to understanding the adolescent diet. One participant expressed that he typically eats whatever is available at home, regardless of whether the food is unhealthy or healthy. However, most adolescents reported eating healthy foods at home in comparison to what they purchased from carryout stores. Another participant noted the difference in the chicken that she eats at home versus what she eats from the carryout store in her neighborhood. She explained, “My mother don’t [sic] really use a lot of grease when she cook chicken. She only use a little bit and she put it in flour.” As with several other studies, the results from this research illustrate that the food options children receive from parents and caregivers strongly influence their eating habits. The adolescents in this study admitted that their parents’ behaviors actually influenced their eating habits. Although this study was limited by the size of the sampled population, and thus not representative of all African-American low-income adolescents in Baltimore City, the extrapolated data still contributes significantly to understanding the eating habits of children based on foods consumed at home.

56 Slusser supra note 36, at 1837.
57 See Davis, supra note 11, at 57.
58 Janine M. Jurkowski et al., Engaging Low-Income Parents in Childhood Obesity Prevention from Start to Practice, 38 J. COMMUNITY HEALTH 1 (citing M. Golan, Parents as Agents of Change in Childhood Obesity from Research to Practice, INT’L J. PEDIATRIC OBESITY 66, 66-76).
59 Christiansen supra note 28, at 653.
60 Id. at 656.
61 Id.
62 Id. at 657.
63 Id. at 658.
In addition to needing nutrition education to instruct parents and children on theoretical principles (i.e., healthiest cuts of meat, techniques for reducing sodium in canned vegetables, difference between whole and refined grains), there must be experimental settings to apply this knowledge. Parents have expressed interest in participating in interactive nutrition education classes where they will learn more than just the facts. This is important because employing cooking methods of their parents is one of the ways that children model their behavior. A logistic regression analysis (in Figure 1) shows a positive association between the reduced risk of obesity and food prepared using healthier methods.

Data from the survey revealed that caregivers of overweight adolescents were most likely to deep fry meat and skip draining it prior to consumption. Alternatively, caregivers of normal-weight adolescents were less likely to fry meat and more likely to drain any fried meat.

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<th>Figure 4: Logistic regression analyses examining factors associated with African-American adolescents' risk of being overweight or obese</th>
<th>(Rebecca F Kramer et al., Healthier Home Food Preparation Methods and Youth and Caregiver Psychological Factors Are Associated with Lower BMI in African American Youth, 142 J. Nutrition 948, (2012)).</th>
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For this reason, Curbside Cookhouse will be an effective tool in educating SNAP recipients about what constitutes healthy food and how to prepare such food to preserve the food’s healthfulness. Combining theoretical and experimental instructional techniques will provide both caregivers and children with the fundamental skills to make better purchasing and meal preparation decisions. Researchers believe that if caregivers become equipped with the knowledge and resources to prepare healthy meals, then most of them will purchase fresh meal ingredients and prepare food at home.

64 Slusser, supra note 35, at 1838.
65 Virudachalam et al., supra note 52, at 1029.
Another key component of the Curbside Cookhouse program is the education of participants on meal preparation via experiential learning. The findings in the SNAP Education and Evaluation Study (Wave II) support the premise that parental engagement is a critical component of reinforcing nutrition messages passed to children.\(^{66}\) In one trial of this study, children received the direct education in a classroom setting while their parents received indirect education via take-home materials.\(^{67}\) The lessons included worksheets on topics presented in the classroom, as well as activities that the adults could complete with their children.\(^{68}\) This program reached 1,244 third grade students and parents.\(^{69}\) Parents whose children participated in nutrition classes reported that they would have better reinforced what their children learned if they had known more about the program’s goals and content.\(^{70}\)

Because of parental desire for increased engagement, the study recommended multiple methods to provide nutrition education and to implement educational programs in a manner that maximizes parental involvement.\(^{71}\) This recommendation shows that a program such as Curbside Cookhouse would be effective in shifting children’s eating habits to the healthier end of the diet spectrum because it uses parental engagement. Hopefully, this will translate into childhood adoption of diets lower in saturated fat, trans-fatty acids, free sugars, and salt.

In an article in Agriculture Business Week, the Under Secretary Kevin Concannon of the USDA stated, “The results of this study reiterate the critical role of nutrition education and promotion in improving the healthfulness of SNAP purchases... USDA and our partners continue to explore a wide-ranging set of strategies that support families as they purchase, prepare, and eat more healthy foods.”\(^{72}\) From this comment, it is evident that healthy meal preparation is an essential element in reducing childhood obesity. Curbside Cookhouse thus has the potential for success in mitigating obesity because it targets the preparation of food.

**VI. LEGAL MODES OF INTERVENTION**

Coupling the education component of the Curbside Cookhouse program with legal interventions is essential to successful implementation. Throughout history, legal strategies have played a significant role in resolving health issues.\(^{73}\) This project will use local and state laws to foster healthy eating habits among low-income households receiving SNAP benefits. The government can positively affect the reduction of childhood obesity in low-income neighborhoods by using its power to allow environmental changes.

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\(^{67}\) Id.

\(^{68}\) Id. at 6.

\(^{69}\) Id.

\(^{70}\) Id. at ES-6.

\(^{71}\) Id. at ES-14.

\(^{72}\) Altarum Institute, Study: Strong Nutrition Education Can Lead to Healthier Food Choices Among Low-Income Families, Agriculture Business Week 1 (2013).

\(^{73}\) Gostin, *supra* note 25, at 115.
that influence the determinants of childhood obesity. In doing so, the government makes it easier for parents and caregivers to make better nutritional decisions.

The Curbside Cookhouse program will employ indirect regulation strategies in its program intervention design. Using indirect regulation will aid in the feasibility and effectiveness of Curbside Cookhouse. Moreover, these legal interventions will provide the foundation for successful implementation of other innovative interventions aimed at reducing childhood obesity in Baltimore City. Curbside Cookhouse will use indirect regulation through resolutions, spending, taxation, contracting, and tort liability.

A. Resolutions
Baltimore City has passed a number of resolutions supporting obesity prevention and reduction initiatives. For example, Bill 06-023R, adopted by Baltimore City Council on October 30, 2006, calls for stakeholders (i.e., schools, parents, organizations, and community groups) to implement programs that encourage healthy eating behaviors.74

By passing a resolution to support Curbside Cookhouse, the mayor and city council will demonstrate their commitment to educating and training parents, caregivers, and children on preparing healthy food, and equip them with nutrition education to assist them in choosing healthy foods. These actions will have an impact on the diets of children, and be beneficial in reducing the prevalence of obesity in low-income neighborhoods.

Adoption of such a resolution will make it easier to gain the support of elected officials and vendors in order to implement and sustain Curbside Cookhouse. The resolution will provide mechanisms for easier access to use schools and recreation facilities. Further, passage of resolutions that promote Curbside Cookhouse will make it easier for the government to allow joint usage agreements between the City and private contractors who may be involved with Curbside Cookhouse.

B. Spending
State and local governments can use their spending power to finance health interventions, including nutrition education programs. The State of Maryland receives money from the Federal government to help fund its SNAP nutrition education program. The State can set aside an increased portion of this funding for Baltimore City to help fund the Curbside Cookhouse program. This is a viable option because the program specifically targets households that receive SNAP benefits. Curbside Cookhouse can use this money to cover the cost of food, supplies, and incentives. The program will work closely with city leaders to lobby the State for additional funding.

C. Tax Incentives

Likewise, the Maryland government can use its taxation power to encourage commercial entities to participate in and contribute to Curbside Cookhouse. Tax incentives in the form of tax credits would be an effective legal tool for incentivizing commercial entities to support Curbside Cookhouse. The Baltimore City Council is currently providing tax credits for other initiatives aimed at improving healthy eating in Baltimore. For instance, Baltimore City modified its law to provide a personal property tax credit for food retailers operating in food desserts. The credit is the amount of personal property tax assessed in a given year, less any other credit applied to the personal property that year, multiplied by 80%. Similarly, Baltimore City gives tax credit on property used for urban agricultural purposes. The amount of the credit is equal to the amount of property tax assessed for a given year, minus any other credits applied to the property that year, multiplied by 90%.

To encourage vendors to donate food, supplies, and time to the Curbside Cookhouse program, Baltimore City should enact provisions providing these vendors with a personal property tax credit. The amount of the credit would be proportional to the value of in-kind donations that a vendor provides to the program.

Similarly, in 2017 Maryland state legislators passed an income tax credit to qualified farms in certain counties that donated food. The tax credit gives farms a maximum credit of $5,000 on income tax for tax years 2017 through 2019, providing that the credit is equal to 50% of the value of an eligible food donation or 75% of the value of donated certified organic produce. The law creates conditions favorable for other enacted tax credits. In particular, a similar income tax credit provided to grocery retailers, like those who donate to Curbside Cookhouse, is another effective incentive for businesses to donate food and supplies.

Taxation can be a highly charged issue. For this reason, seeking a tax credit for entities that contribute to the Curbside Cookhouse program may be difficult. Given the fact that political ideologies and personal agendas play a large role in the votes of elected officials, securing the votes needed to pass a tax incentive bill may be a challenge. However, since Baltimore City previously passed resolutions committing the city and its resources to reducing childhood obesity and promoting healthy eating, policy makers may view a Curbside Cookhouse credit more favorably.

Curbside Cookhouse can overcome this taxation burden by educating the council and state legislators on the value of this program and providing them with supportive science. Because Curbside Cookhouse tailors itself to address transportation, taste, and skill barriers, the program is likely to be effective. This information would make the city council and state legislators more amenable to supporting Curbside Cookhouse.

75 BALT. CITY CODE Art. 28 Subtitle 10 § 10-30(D).
76 BALT. CITY CODE Art. 28 Subtitle 10 § 10-19(D).
78 Id.
79 Goslin supra note 25, at 29.
D. Contracts

1. Food Procurement

Curbside Cookhouse will procure food through purchasing and donations, with the latter being the primary source. The program places a priority on donations to increase community engagement while incentivizing organizations to aid low-income residents in accessing a healthier environment. Furthermore, food donations help lower program costs. However, when the program does not obtain enough donated food, Curbside Cookhouse will work with Baltimore City Schools to procure outstanding food items. Because the Baltimore City Public School System purchases a large volume of food, Curbside Cookhouse will partner with them to participate in collective purchasing from their food vendors.\(^{81}\) By utilizing the school system’s buying power, Curbside Cookhouse can negotiate lower prices for the food used to operate the program. This intervention will comply with the policies set forth in the Procurement Administrative Regulations. Curbside Cookhouse will enter into a Memorandum of Understanding (MOU) with the Baltimore City School Board Commission to set forth the terms of the agreement regarding the food purchasing. The MOU will include provisions regarding the payment, delivery, and storage of food acquired through collective purchasing. The staff will label foods for the program as “Curbside Cookhouse” and store it under the same regulated food and safety requirements as the school’s food.

Negotiating this procurement agreement with the commission will be difficult since schools may not want to take on the responsibility of ensuring that the food for Curbside Cookhouse is processed, delivered, and stored properly. This will require additional work by the school’s staff. In an effort to alleviate this additional burden, Curbside Cookhouse will include some provisions in the MOU to compensate the school. Additionally, the program may work with the city and state to provide a subsidy to the schools that assist with the Curbside Cookhouse program.

2. Joint Use Agreements

A joint use agreement is a legally binding contract between two entities that delineates the terms and conditions for shared public property or facilities. These agreements can be beneficial to the community by promoting a collaborative spirit.\(^{82}\) However, sharing costs of maintenance, security, repairs, and improvements may be a challenge. Curbside Cookhouse will collaborate with the Baltimore City Public Schools and Baltimore City Department of Recreation & Parks to work out an agreement to host the Curbside Cookhouse program in their spaces.


\(^{82}\) Gostin supra note 25, at 115.
Fear of liability is the greatest barrier preventing parties from agreeing to joint use. Curbside Cookhouse can mitigate this barrier by identifying risks and formulating a plan with all parties regarding the ways that each party may share the risks, costs, and perhaps immunity. Some potential risks include injuries, fire, and electrical problems, all of which the agreement will address.

E. Tort Liability

In addition to the federal protection offered to volunteers through the Volunteer Protection Act, Maryland enacted laws designed to give its volunteers additional protection through the Volunteer Service Act. Both laws protect people who (1) act in a manner that aligns with their duties as a volunteer, (2) possess valid certification or license if required by the nature of the volunteer duties, and (3) do not commit acts that are intentional, criminal, or careless.\(^{83}\)

In order to increase volunteerism, Curbside Cookhouse will require program participants to sign liability waivers. Otherwise, food vendors and volunteers may be unwilling or apprehensive about storing, transporting, handling, and preparing food for the program. The waivers will inform the participants that Curbside Cookhouse (and its volunteers and vendors) safely handles all food and products in compliance with all food safety laws. It will also inform participants that, by signing the waiver, they are waiving all claims of civil liability against Curbside Cookhouse, Baltimore City Public Schools, Baltimore City Department of Recreation & Parks, program volunteers, and food vendors for any illness resulting from the consumption of the food or injuries sustained on the premises when participating in the program. Essentially, the waiver puts the participants on notice that they are assuming some risk for participating. Moreover, the waiver will include a statement to explain that the participants disclosed all known allergies. Any participant may choose at any time during the class to withdraw for any reason.

However, the protective laws will not absolve liability for grossly negligent or willful and wanton misconduct in the donation, preparation or service of food. Both Federal and Maryland law prohibit such extreme misconduct.\(^{84}\) All persons involved with Curbside Cookhouse must always act in a lawful, respectful, and good faith manner. For this reason, the program will follow the food and safety regulations set forth for food establishments and food service personnel, even though it does not qualify as a food establishment.

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84 Id.
Furthermore, this liability waiver serves a two-fold purpose. First, it notifies participants that the program makes good faith efforts to provide them with quality and safe food during their participation. The waiver will address any ethical concerns that may arise concerning the quality of the food. The program anticipates one ethical issue to surface—the quality of food donated to low-income families. Many perceive that donated foods are of lower nutritional quality.85 Oftentimes, organizations who receive donated items must accept any products that grocery retailers give.86 The products are usually convenient foods that are processed and comprised of low nutritional value.87 It would be unethical and discriminatory to engage in providing food of a substandard quality to participants, especially based on their socio-economic status. The program understands that skepticism based on these ethical concerns could be a barrier to recruiting family participation.

Curbside Cookhouse would mitigate this barrier by being transparent about food sources and the instructor backgrounds. The program’s website will list all program partners, sponsors, and instructors. Before the start of the program, all volunteers (i.e., instructors, chefs) will introduce themselves to the participants and give background information relating to their nutrition and culinary expertise, among any other relevant information. Next, the instructor or chef will provide participants the source of all of the ingredients for use in the meal preparation. By being transparent about its practices, Curbside Cookhouse aims to overcome the ethical barrier of mistrust about food quality.

The potential for non-SNAP-receiving households to suggest discrimination is another likely but possible ethical issue. These feelings may arise because they cannot participate in the program even though their children are obese or remain at high risk of childhood obesity. Although this could lead to the filing of a tort suit, the case would likely not prevail. Curbside Cookhouse is not a mandatory program and seeks only to provide nutrition education to families receiving SNAP benefits.

Because children from SNAP households are more likely to consume fewer pure fruit juice beverages and vegetables,88 Curbside Cookhouse targets only SNAP households. Most public health programs that issue benefits distinguish among classes of people and businesses. If there is sufficient evidence to justify the classification, there is no harm.89 Therefore, the chances of a successful constitutional challenge to Curbside Cookhouse’s recipient choice on the basis of an equal protection or discrimination argument is slim. On the other hand, by implementing this intervention, participation in SNAP may increase.

86 Id.
87 Id.
88 FNS, supra note 17.
89 Gostin, supra note 25, at 137.
VII. CONCLUSION

The impacts of childhood obesity are well documented, and should remain a priority among health experts and practitioners, schools, parents, government officials, and communities-at-large. Moreover, the social and environmental factors affecting low-income families heighten the need for obesity mitigating interventions, especially those seeking to improve the eating habits of children. By implementing the Curbside Cookhouse program, children and parents will become equipped with nutrition education training suiting their needs at home. Applying their newfound skills can positively influence their eating behaviors and reduce childhood obesity.