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Understanding Vegetable Feeding Practices Among Families With Young Children Using Farmers' Market Coupon Programs: Does Participation Increase Children's Vegetable Consumption?

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Abstract

Background: Children consistently consume low levels of vegetables. Research shows that adults participating in incentivized vegetable programs purchase and consume more vegetables. It is not clear if children in those households eat more vegetables.

Objective: To understand vegetable feeding practices of families with young children using farmers' market coupon programs: current experiences, program impacts, and additional supports.

Study Design, Settings, Participants: A mixed-methods design was used, which included a demographic survey, children's vegetable screener, and semi-structured interview. Participants were parents/caregivers (n=23) of children ages 2 to 5 years, using coupons (WIC Farmer's Market Nutrition Program, Health Bucks) at a downtown farmers' market in a northeastern state in summer 2017.

Measureable Outcomes/Analysis: Experiences of feeding vegetables to young children, impacts of coupon programs, and additional supports needed to increase children's vegetable intake were examined using qualitative data analysis techniques.

Results: Participants had mixed familiarity with feeding guidelines, received feeding advice from a range of sources, and used a variety of strategies for introducing vegetables into children's diets. Common barriers to children's vegetable consumption include cost, time, negative influences of others, pickiness, and parent not having or cooking vegetables at home. The majority thought their child ate enough vegetables and also wanted them to eat more. Program benefits included increasing accessibility to fresh vegetables and providing supports in using vegetables. In addition to lower cost and more coupons, participants wanted greater support in feeding practices.

Conclusion: It is not clear if study participants were more motivated to purchase and serve vegetables to their children; however, having access to lower-cost, high-quality produce removed one barrier to doing so. Other individual, family, and policy barriers also need to be considered when dietetics professionals work to help increase children's vegetable intake. These include helping parents understand typical trends in children's taste development, helping parents overcome their own food dislikes, teaching parents about effective feeding strategies, and offering additional financial supports.

UNDERSTANDING VEGETABLE FEEDING PRACTICES AMONG FAMILIES WITH YOUNG CHILDREN USING FARMERS' MARKET COUPON PROGRAMS: DOES PARTICIPATION INCREASE CHILDREN'S VEGETABLE CONSUMPTION?

by

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INTRODUCTION

The 2015 U.S. Dietary Guidelines for Americans (DGA) recommend that adults who consume a 2000 kcal/day diet eat 2.5 cup-equivalents of vegetables each day in order to meet nutrient needs[1]. The recommended vegetable intake for children ages 2 to 8 ranges from 1 to 1.5 cup-equivalents (c-eq.) per day.[2] These recommendations are made in the context of understanding that diets high in vegetables are protective against a multitude of chronic diseases as well as cardiovascular disease.[3, 4] Americans, however, are falling far short of these recommendations. Analysis of National Health and Nutrition Examination Survey (NHANES) data from 2009 to 2012 shows that vegetable consumption by individuals ages 2 years and older was a mere 0.76 c-eq. per 1000 kcal.[5] When adjustments are made for race and family income, the numbers are still low: African Americans consume 0.66 c-eq. per day, Mexican Americans consume 0.79 c-eq. per day, and families at and below 100% of the poverty threshold consume 0.72 c-eq. [6] Children's intake of vegetables has been measured to be even lower at 0.53 c-eq.[7] Researchers have identified multiple potential reasons for low vegetable consumption such as lack of knowledge,[8, 9] low income levels,[10] low education levels,[11] and high cost of fruits and vegetables[12, 13] including the cost of food waste from children who often reject vegetables and are reluctant to try new foods.[14]

Many strategies for increasing children's vegetable consumption focus on reaching school-aged children and involve providing greater access to fruits and vegetables at school.[15] Many of these programs have been shown to increase children's knowledge, exposure, and willingness to try fruits and vegetables (FV), with the greatest improvements experienced by children involved in programs for longer than one year; however, the results are mixed regarding the long-term effect of increased FV consumption.[16,17] Another school-based strategy involves

implementing multidisciplinary programs that combine nutrition, gardening, cooking, and physical activity. While individual programs appear to have positive outcomes,[18,19] the long-term impacts are unclear and researchers are calling for a more systematic study of such approaches to guide the development of future programs.[20]

An alternate approach to increase children's vegetable intake is to focus on behavior modeling, either through direct peer-to-peer modeling[21] or screen-based modeling.[22] Programs such as these often use a multi-pronged approach of repeated taste exposure, behavior modeling, and rewards to encourage children to eat more vegetables.[23] Multi-component approaches have been shown to be effective, but again, the lasting effects for vegetable consumption are limited.[24] Some programs specifically targeting preschool-aged children have had more success in increasing fruit and vegetable consumption,[25] supporting the belief in the importance of starting nutrition education early.[26]

Children's taste preferences develop early in life, long before children reach school, so to have a greater impact on increasing children's vegetable consumption, interventions may be more effective if they reach children before they formally enter school at age 5. As many parents know, it is a challenge to get young children to try new foods, especially vegetables. It is very common for children to go through a phase of food rejection due to neophobia - fear of the new.[27] While this can manifest itself in more serious eating disorders, for many children, food rejection is a common phase that can be overcome[28] with repeated exposure being more effective than rewards as a method for getting children increase to consumption of fruits and vegetables.[29] When viewed in the nature vs nurture dichotomy, research has shown that the adaptive predisposition to avoid new foods can be overridden by repeated exposure. Research suggests

up to 10 exposures to a new food are needed to overcome neophobia and that this exposure can be through direct taste experiences as well as through smell and touch.[30,31]

As stated previously, behavior modeling has been shown to be effective in increasing children's vegetable consumption. Parental modeling in particular and the home environment in general both affect whether or not children consume vegetables.[32, 33,34] In a review article looking at the association between parenting and children's eating practices, Ventura and Birch identify modeling and availability as having a positive effect on children's acceptance of new foods.[35] This implies the importance of looking at the broader family environment when developing intervention strategies[36] with the understanding that mother-child interactions are of particular importance. Children are less likely to exhibit food fussiness when mealtimes are structured, when mothers are eating the same food at the same time, and when children have autonomy regarding choice and serving size at mealtimes.[37] Additionally, researchers looking at maternal habits to improve the diets of young children propose that future interventions should focus on creating positive mother-child interactions around the act of preparing and serving foods.[38]

Providing repeated exposure to new foods and modeling healthy eating patterns at home may be a challenge for many families and even more so for those with limited resources. Repeat exposure costs money and families with limited incomes may be opposed to spending spare resources on foods that their children will likely not eat. In a qualitative study of the impact of children's food preferences on family food purchases, Daniel found that a significant barrier to healthy eating was the cost of food waste resulting from having to throw away food that children do not eat.[14] Constrained by limited food budgets, mothers tended to purchase foods they knew their children would eat, even if they knew that the foods were unhealthy. In response to

Daniel's research, Connell et al developed a list of strategies aimed at helping parents overcome these obstacles. The strategies fall into two broad topics: risk reduction (gradual introduction of riskier options, positive emotions through investment in labor using preparation techniques to increase liking, and using presentation to change liking) and helping parents overcome their own limitations (parental self-control and moving beyond nutrients).[39] It can be argued that another sub-strategy to overcome parental limitations is overcoming parental food dislikes, specifically related to vegetable intake.

Before considering if and how the strategies listed above can be put into practice, professionals and organizations working to help low-income families need to understand current feeding recommendations in terms of both types and quantities of foods[40] as well as feeding practices.[41] However, not only are there no agreed upon professional feeding guidelines, the guidelines that do exist are not widely disseminated. In a Special Issues Papers section of *Appetite*, Vereijken et al reviewed current evidence of feeding as it relates to development of healthy eating habits and concluded that there is a gap between what is recommended by government guidelines and what parents are actually doing in practice.[42] In a 2011 review of feeding guidelines, Schwartz states that while modeling and availability are encouraged over more coercive practices, the importance of parent-child interactions was not thoroughly addressed, specifically as it relates to strategies to help parents overcome their children's food refusal and picky eating habits.[43] Unfortunately, not only are parents not well-supported in understanding their children's non-clinical feeding problems, available information is often delivered too late, is not well communicated, and much-needed social support is insufficient.[44] Additionally, descriptions in the literature of what additional support low-income families may need are limited.

In a study looking at a small group of low-income African American and Hispanic parents of preschoolers, researchers discovered that in addition to not serving foods that had previously been rejected by their children, the parents also were not consistent in their feeding strategies when attempting to reintroduce a food.[45] This led authors to the conclusion that educational programs need to address both the short-term goal of getting children to eat as well as the longer-term goal of helping parents develop their children's life-long healthy eating habits. For families who are food insecure or who have limited food budgets, this proposes a significant challenge for they often don't have the resources to serve their children foods that will likely be refused. This poses a dilemma — how can we expect children to eat healthy foods, especially vegetables, if they never learned to accept and enjoy them?

Various federal and state agencies have initiated vegetable incentive programs to increase FV intake by low-income populations. These programs primarily operate either as rebate or coupon programs. The United States Department of Agriculture (USDA) recently piloted the Healthy Incentive Pilot (HIP) project, directly targeting Supplemental Nutrition Assistance Program (SNAP) participants. Qualifying families received a direct financial incentive of $0.30 for every SNAP dollar spent on targeted FVs purchased at approved retailers.[46] A randomized control study of the effectiveness of the program in impacting participants' food intake showed that participation in the program led to a modest increase in FV consumption.[47]

In contrast, coupon programs offer vouchers for specific dollar amounts and are often intended to be used at specific points of purchase. Coupon programs are offered by a variety of federal, state, and local entities. The Supplemental Nutrition Program for Women, Infants, and Children (WIC) offers coupons as part of its Farmers' Market Nutrition Program (FMNP). The goal of this program is to "provide fresh, unprepared, locally grown fruits and vegetables to WIC

participants, and to expand the awareness, use of, and sales at farmers' markets" by issuing coupons that can be redeemed for fresh FVs at state-approved farmers' markets or farm stands.[48] The program also includes some nutrition education, often through associated state agencies, to provide support for FMNP recipients in improving their diets and learning food selection, storage, and preparation skills. It is unclear, however, if child feeding recommendations are included in educational programs. WIC also operates the WIC Vegetables and Fruits Check Program (WIC VF). This program provides checks for different amounts ($4, $8, $11, or $17) that can be used to purchase fresh FVs at a variety of establishments, including grocery stores and farmers' markets.[49] Local entities also offer coupon programs. Of particular interest for this study are two programs run through the Food Bank of Central New York (FBCNY): CNY Healthy Bucks and Just Say Yes (JSY) Health Bucks. Both of these programs provide $2 coupons to SNAP-eligible individuals for the purchase of locally grown (New York State) fruits and vegetables.[50]

Studies of both rebate and coupon incentives have shown these strategies to be effective in increasing both FV purchases[51,52] and consumption.[53] The effects also appear to be beneficial for families with lower education levels and low levels of fresh produce consumption.[54] These studies, however, just looked at the adults in the households and did not study whether or not effects were also seen for children's vegetable consumption. Research shows that families participating in incentivized vegetable programs purchase more vegetables, but it is not clear if this translates into greater vegetable consumption by children in those households. The majority of studies on the association between incentive programs and vegetable consumption focus on the adults making the food purchases. No literature was found on the subject of whether or not participation is associated with greater vegetable intake by the children of those adults. The

purpose of this study was to understand the vegetable feeding practices among families with young children using farmers' market coupon programs to begin to assess if participation leads to changes in children's vegetable intake.

This research project sought answers to the following questions: What were the experiences of participants feeding vegetables to their children? How did using farmers' market coupons help families feed vegetables to their young children? What other supports did families need to help them teach their children to eat vegetables?

METHODS

The study used qualitative and quantitative methods including a demographic survey, a children's vegetable screener, and semi-structured interviews. All tools were pilot tested prior to data collection by an individual who met all of the study's inclusion criteria. Based on the results of the pilot test, no changes to the tools were necessary. This study was approved by the Institutional Review Board at Syracuse University prior to any data collection. Participants provided informed consent prior to participation.

PARTICIPANTS AND RECRUITMENT

Participation was limited to parents and caregivers of children between the ages of 2 and 5 who were at the Downtown Farmers' Market in Syracuse, New York from July to September, 2017 and who used at least one coupon program to purchase vegetables. Participants not meeting these criteria were excluded from the study. Potential participants were approached by the primary researcher at nutrition education sessions run by the Food Bank of Central New

York or after being observed using WIC Farmers' Market Coupons to purchase produce at farm stands. The researcher explained the purpose of the study and asked participants if they were interested in participating. Participants (n=23) completed the demographic survey and children's vegetable screener prior to participating in the interview portion of the study. Five participants did not have time to be interviewed and only completed the survey and screener. All data were gathered the same day that participants were recruited. Individuals who agreed to participate were presented with and signed an informed consent form before proceeding with the study. All participants who were given the survey and screener received a children's kitchen tool (vegetable chopper with wooden handle) as a thank you gift. Participants who also agreed to be interviewed were entered into a raffle for one of five one-year subscriptions to a children's cooking magazine (*ChopChop*). The primary researcher randomly selected 5 names and purchased subscriptions in November, 2017.

MATERIALS AND MEASURES

All materials used for this study are located in the Appendix.

Demographic Survey

Demographics

The first section of the demographic survey was modeled on the Pew Research Center Demographic Questions[55] and asked about participants' sex/gender, age, race/ethnicity, education, income, marital status, household size, and household composition. Questions about the guardianship and ages of children were added to the document to ensure that participants met the study's inclusion criteria.

Participation in Head Start/Early Head Start

The survey asked if participants had any children currently enrolled in Head Start/Early Head Start (yes, no) to assess any correlation between enrollment and vegetable consumption.

Household food security

Participants were asked to select which statement best describes the food eaten in their household: enough of the kinds of food we want to eat, enough but not always the kinds of food we want, sometimes not enough to eat, or often not enough to eat. The question was taken from the USDA's 18-question Core Food Security Module.[56] Responses to this question were not scored, but rather used in conjunction with income as a less burdensome assessment of food security.

Participation in coupon program

Participants were asked for the number of years they have participated in any farmers' market coupon program to assess average length of time people used coupons.

Vegetable consumption

Participants were asked to select from the USDA's list of vegetables most commonly-consumed in 2015[57] (potatoes, tomatoes, onions, head lettuce, carrots, sweet corn, leaf lettuce), which ones they eat most often at home. Instructions stated to select all that apply. A category of "other(s)" was added to capture any commonly-eaten vegetables not on the list.

Attitude toward vegetable consumption

Participants were asked to rate the importance of their own vegetable consumption and the importance of their children's vegetable consumption. Options were along a 5-point scale ranging from not important to very important.

Feeding practices

Participants were asked how willingly (willingly, not willingly) their child ate vegetables when they were first being introduced into his/her diet. Participants were also asked to select from a list of actions which they took if their child refused to try a new vegetable. The list of actions was developed in response to a review of literature citing family feeding practices as playing a significant role in the development of children's food preferences.[58] Key behaviors included whether or not parents used coercive feeding practices, modeled good eating behavior, and if and how previously rejected foods were reintroduced.

Vegetable Screener

Participants were asked to complete a vegetable screener to assess the amount and frequency of their child's current vegetable intake. The screener was modeled on the National Institutes of Health (NIH) Eating at American's Table Study/National Cancer Institute (NCI) Fruit & Vegetable Screener: All Day.[59] Although fruit and vegetable screeners have been shown to lead to overestimations of consumption,[60,61] the NCI lists the Eating at America's Table Study All-day screener as a validated short dietary assessment instrument.[62] The original screener was modified in the following ways: only questions asking about vegetables were included and original serving sizes were reduced by one half to make them more appropriate for a child's intake. If participants had more than one child within the specified age range, they were asked to

base their responses on their experiences with just one child. Participants were asked to think about the vegetables their child ate within the past month (raw and cooked, eaten as snacks and as meals, eaten at home and away from home, eaten alone and mixed with other foods) and to report how many times per month, week, or day the child ate each food and how much she/he usually had in a serving. The screener asked about the following vegetables: lettuce salad, French fries or fried potatoes, other white potatoes, cooked dried beans, other vegetables, tomato sauce, vegetable soups, and mixtures that included vegetables. To help participants visualize food quantities, the survey included color photographs of all vegetables in the various portion sizes listed in the survey. Survey responses helped assess any potential trends in vegetable consumption among the children of families using coupon programs.

Semi-structured Interview

The interviews took place in semi-private seating areas in and around the Downtown Syracuse Farmers' Market. Interviews were audio recorded with participant consent. Five participants did not consent to being recorded and written field notes were taken by the primary researcher and/or a trained student assistant. All interviews used the same set of questions to gain a more thorough understanding of any potential impacts participation in farmers' market coupon programs had on feeding practices surrounding their children's vegetable intake. The interview questions were organized into three sections: participant's experience with coupon programs, resources used or needed, and children's past and present vegetable consumption. If participants had more than one child within the specified age range, they were asked to base their responses on their experiences with just one child.

Experience with coupon programs

Questions in the first section were designed to help the researcher understand participants' individual experiences using coupon programs and what impact, if any, it has had on their children's vegetable intake and/or other food-related behaviors. The first set of questions asked how participants learned about the coupon program(s), how long they have used coupons to purchase vegetables at the market, and if they are able to correlate any effects of participating with their ability to feed vegetables to their children. This information helped set the stage for understanding how effective programs are at attracting and retaining participants as well as perceptions of their impacts on family feeding practices. Participants were next asked to list what vegetables they purchased with coupons. This question helped assess if and how vegetables purchased at farmers' markets with coupons differed from those purchased elsewhere, such as any new or less-commonly eaten vegetables. The section closed with questions on if and how participating in a coupon program contributes to other food-related behaviors such as trying new recipes, using different storage techniques, and talking with others about their experiences with vegetables or recipes. This last line of questioning was developed in response to the fact that CNY Health Bucks, one of the types of coupons, were distributed after participants took part in a cooking demonstration and food tasting. The researcher wanted to assess the relationship between non-feeding food behaviors to participants' vegetable feeding practices.

Resources used or needed

Questions in the second section of the interview were designed to frame participants' use of farmers' market coupons in the broader context of existing knowledge and needed information to help with vegetable feeding practices. Many parents seek the advice of others when faced

with potential challenges in their children's eating habits and these questions document who participants got feeding advice from and how familiar they were with any recommended feeding guidelines. This information may help identify potential gaps that may exist in services or resources by organizations offering coupons.

Children's past and present vegetable consumption

The final section of interview questions asked participants about their experiences feeding vegetables to their children. This study sought to understand whether participants had children who were generally good eaters when it came both to eating vegetables as well as new foods. The first set of questions asked how participants introduced vegetables to their child, what they do if/when a child refused to eat or try vegetables, and how the child generally reacted to new or unfamiliar foods. Lastly, participants were asked if they thought their child ate enough vegetables, if they would like their child to eat more vegetables, and what prevented their child from eating more vegetables. These final questions help assess not only parent's perceptions of their children's current vegetable intake, data which can also be compared to responses on the vegetable screener, but also how the parent/caregiver's attitudes about the importance of their child's vegetable consumption and what specific challenges they faced. Responses from these last questions can help identify what additional assistance participants would find helpful to support them in their efforts to have their children eat more vegetables.

After conducting four interviews, the primary researcher added a closing question about what could be done differently regarding the coupon program they used. This question was added to more directly capture participants' thoughts and ideas on ways coupon programs could better meet their specific needs.

DATA ANALYSIS

Demographic Survey

Descriptive statistics from the demographic survey were calculated using Microsoft Excel (Version 14, 2010). Questions requiring a simple count (gender, race, education, income, marital status, number of adults in household, child's age, and participation in Head Start/Early Head Start) were tabulated and reported. Questions requiring an average (age, household size, number of adults, and length of participation) were tabulated and reported with standard deviation. Responses to the question about vegetables most commonly eaten at home were counted and reported. If participants listed vegetables not on the list, these were recorded. Responses to questions about importance of parent's and child's vegetable consumption were scored on a scale of 1 to 5 with higher scores indicating greater importance. Responses to child's willingness to eat vegetables were counted and reported and compared to any similar comments made during the participant's interview. Reponses to strategies parents used if child refused to eat vegetables were counted and reported and compared to any similar comments made during the participant's interview. Reponses to survey questions about vegetable consumption and feeding practices were counted and compared to responses given during the interview to the question about these same themes.

Vegetable Screener

Descriptive statistics from the children's vegetable screener were tabulated using SAS (version 9.4, 2013). Code provided by the NCI[63] was used to calculate results, with the scores being divided in half to reflect the smaller sizes used in the study screener. Responses were

scored as c-eq. based on MyPyramid c-eq. The results show the total average vegetable intake and the number of servings of each vegetable included in the screener.

Semi-structured Interviews

Interviews were transcribed verbatim by the primary researcher or a trained research assistant from recorded audio files or from the primary researcher and/or trained student researcher's field notes. Transcription was typically completed within one week of the interview. All transcripts were reviewed by the primary researcher to verify accuracy. Transcripts were compiled into a single document with the text of each response listed under the specific interview question. Two researchers independently reviewed the responses and developed initial coding schemes based on the data. The researchers reviewed the coding schemes and strategy to achieve consensus. When the farmers' market closed for the season, data were examined to assess saturation. It was determined that sufficient data had been collected and no other participants were recruited for participation. Using the data collected at the market, responses were categorized within the three broad study themes of experience, benefits, and wanted supports. The content of each response was further analyzed to uncover specific subthemes as listed in Table 1. These subthemes were coded and used to organize the study findings.

Table 1. Emerging themes and subthemes from participant interviews

Themes	**Subthemes**
Experience	Knowledge and implementation of feeding practices • Sources of feeding information • Feeding advice received • Vegetable introductions • Feeding practices • Non-feeding practices • Vegetables purchased Attitude toward children's vegetable consumption

	Barriers to children's vegetable consumption • Cost • Time • Negative influences of others
Benefits	Affordability Accessibility Exposure to new vegetables Cooking knowledge and skills
Wanted Supports	Structural or systemic supports • Reducing cost of vegetables • Increasing amount of benefits Behavioral support Social support Knowledge and skills

RESULTS

PARTICIPANTS

A total of 28 individuals agreed to participate in this study. Data from 5 of these individuals were excluded because the participant did not meet the inclusion criteria. Of the remaining 23 individuals who completed the survey and screener, 5 did not have time to be interviewed. Throughout the results section, the term "participants" is used to refer to the cohort of 23; the term "interviewees" is used to refer to the 18 participants who were interviewed. Demographic data are summarized in Table 2.

Demographics

All participants were women, with an average age of 39 years. Nearly half identified as white and one third as Black/African American. Two participants identified as "other," one participant identified as Hispanic/Latino, and one as Native American. Thirty percent of participants had some college education. Nearly 50% had a complete high school education or

less. Four participants completed college. The majority made less than $25,000 a year. When comparing reported household income to the 2017 poverty guidelines,[64] 55% to 88% fell below the poverty threshold. This range exists because the income breakdown included on the demographic survey did not directly align with the poverty guidelines per household size. Half of participants were married or lived with a partner. One-third of participants had never been married. Two were divorced and two were separated. The average household size was 4.4 people, with the smallest being a household of 2 and the largest of 9. There was an average of 2 adults over the age of 18 in each household. All participants were parents or caregivers of children between the ages of 2 and 5 years of age. Households had an average of 1 child between the ages of newborn and 1 year, 1.1 children between the ages of 2 and 5 years, and 2.6 children between the ages of 6 and 18 years.

Participation in Head Start/Early Head Start

One-third of participants had at least one child enrolled in Head Start/Early Head Start.

Household food security

Over half of participants indicated that they had enough of the kinds of foods they want to eat. Just under a third indicated they had enough food, but not always the kinds they wanted to eat. Two indicated that they sometimes did not have enough to eat. One left this question unanswered.

Participation in coupon program

The average length of time participating in a coupon program was 4.4 years (SD±4.0). The survey did not count the number of participants using each program (CNY Health Bucks, WIC FMNP).

Vegetable consumption

From the list of most commonly eaten vegetables, the selections were made with the following frequency: potatoes (70%), carrots (70%), tomatoes (65%), corn (65%), leaf lettuce (57%), head lettuce (48%), onions (44%), and other (35%). Vegetables listed as "other" included peppers, broccoli, cucumbers, zucchini, cauliflower, spinach, mustard greens, collard greens, cabbage, beets, celery, garlic, squash, ginger, and turmeric.

Attitude toward vegetable consumption

All participants indicated that eating vegetables was something they considered to be important, with their children's vegetable consumption ranked slightly higher than their own. Children's vegetable consumption was very important to 57% of participants, while 52% of participants indicated that vegetable consumption was very important for parents/caregivers. Children's vegetable consumption was ranked as important by 30% of participants; their own vegetable consumption was ranked as important by 35% of participants. Nine percent of participants viewed children's and parents' vegetable consumption as being moderately important.

Feeding practices

The majority of participants (61%) indicated that their children willingly tried vegetables. Nearly one-third indicated that their children did not willingly try vegetables. One participant

left this question blank. The most commonly used strategies for dealing with a child's refusal to try/eat a new vegetable include the following: eat vegetable to show child that she liked it (52%), serving the same new vegetable differently at another meal (43%), not forcing child to try the vegetable (17%), forcing child to try the new vegetable (13%), serving the same new vegetable the same way at a different meal (4%), not serving the new vegetable again (4%).

Table 2. Demographic characteristics for farmers' market coupon users at the downtown farmers' market in Syracuse, New York (n=23)	
Sex	
Female	n=23
Male	n=0
Age (years)	mean: 39 (SD±11.5)
Race/Ethnicity	
White	n=11 (48%)
Hispanic/Latino	n=1 (4%)
Black/African American	n=8 (35%)
Native American/American Indian	n=1 (4%)
Asian/Pacific Islander	n=0 (0%)
Other	n=2 (9%)
Education	
High school incomplete or less	n=5 (22%)
High school graduate or GED	n=6 (26%)
Some college (community college or associate's degree)	n=7 (30%)
Four year college degree/bachelor's degree	n=4 (17%)
Some postgraduate work or professional schooling, no postgraduate degree	n=1 (4%)
Postgraduate or professional degree	n=0 (0%)
Annual Household Income	
Less than $15,000	n=10 (43%)
$15,000 - $24,999	n=9 (39%)
$25,000 - $49,999	n=1 (4%)
$50,000 - $74,999	n=2 (9%)
More than $75,000	n=0 (0%)
No response	n=1 (4%)
Marital Status	
Married	n=5 (22%)
Living with partner	n=6 (26%)
Divorced	n=2 (9%)
Separated	n=2 (9%)
Widowed	n=0 (0%)

Never been married	n=8 (35%)
Number of people in household	mean: 4.4 (SD±1.8)
Number of adults over age 18 in household	mean: 2 (SD±1.0)
Number of children in household	
Between ages newborn – 1 year old	mean: 1 (SD±1.3)
Between ages of 2 years old – 5 years old	mean: 1.1 (SD±5.2)
Between ages of 6 years old – 18 years old	mean: 2.6 (SD±6.8)
Children enrolled in Head Start/Early Head Start	
Yes	n=8 (35%)
No	n=15 (65%)
Food Security	
Enough of the kinds of food we want to eat	n=13 (57%)
Enough food but not always the kinds of food we want	n=7 (30%)
Sometimes not enough to eat	n=2 (9%)
Often not enough to eat	n=0 (0%)
No response	n=1 (4%)
Length of time participating in a farmers' market coupon program	mean: 4.4 years (SD±4.0)
Vegetables most often eaten at home*	
Potatoes	n=16 (70%)
Carrots	n=16 (70%)
Tomatoes	n=15 (65%)
Corn	n=15 (65%)
Lettuce (leaf)	n=13 (57%)
Lettuce (head)	n=11 (48%)
Onions	n=10 (44%)
Other	n=8 (35%)
Importance of parent's vegetable consumption	
Not important	n=0 (0%)
Slightly important	n=0 (0%)
Moderately important	n=2 (9%)
Important	n=8 (35%)
Very important	n=12 (52%)
No response	n=1 (4%)
Importance of child's vegetable consumption	
Not important	n=0
Slightly important	n=0
Moderately important	n=2 (9%)
Important	n=7 (30%)
Very important	n=13 (57%)
No response	n=1 (4%)
Child's willingness to try vegetables	
Willing	n=14 (61%)
Not willing	n=8 (35%)
No response	n=1 (4%)

Strategies if child refused new vegetables*	
I would force my child to try the new vegetable	n=3 (13%)
I would not force my child to try the new vegetable	n=4 (17%)
I would eat the new vegetable to show him/her that I liked eating it	n=12 (52%)
I would serve the same new vegetable the same way at another meal	n=1 (4%)
I would serve the same new vegetable differently at another meal	n=10 (43%)
I would not serve the new vegetable again	n=1 (4%)

*does not tally to 100% because participants could make multiple selections

Reported vegetable intake

Data from 1 vegetable screener was excluded from analysis due to the extreme nature of its content (reported 18 cups of vegetable intake). Data from the remaining 22 screeners were tabulated to reveal that the children of study participants had a daily mean vegetable intake of 1.5 cup equivalents (SD±1.0).

VEGETABLE FEEDING PRACTICES

Qualitative data from participant interviews were organized into the themes of experience, benefits, and wanted supports, which provided insight into how the use of farmers' market coupons fit into participants' vegetable feeding practices.

Experience

Knowledge and implementation of feeding practices

Sources of feeding information. Participants received information about feeding practices from a variety of sources. The most common experience (n=7) discussed during the interviews was that parents/caregivers didn't get feeding advice from anyone but instead indicated that they just knew how to feed their children, either from prior family experiences (ie, having gone through the experience with older children) or sought out information on their own:

> *No, I'm just a parent and I automatically know how to do it. Our parents, our grandparents, our mothers, so you know, I automatically know. (16)*
>
> *Some stuff I pretty much did research on my own. (17)*

Fewer interviewees (n=4) indicated they had received information about feeding from a professional such as a pediatrician (n=4) or a nutritionist (n=4). Several indicated their source of feeding advice was another family member (n=3).

Feeding advice received. Slightly more than half of participants interviewed (n=10) indicated that they were told or knew to introduce vegetables before fruits:

> *The vegetables I was told as far as when they were babies to give that to them first before the fruit because they tend to like the fruit more than the vegetables. (3)*
>
> *...you want to start out not the sweet stuff. So we started pureeing, like, the cauliflower, the green beans first. We introduced the green stuff first rather than starting with blueberries that was sweet. (4)*

Many were advised or chose to start off with sweet potatoes or carrot as the first vegetable while others specifically mentioned offering other vegetables such as green beans, broccoli, and cauliflower. Other advice received was introducing foods one at a time to watch for allergic reactions (n=3) and starting their child off with small portions (n=2). Only 2 interviewees mentioned being told to keep reintroducing a food if it isn't eaten when first offered.

Vegetable introductions. Participants introduced vegetables in a variety of forms. Interviewees were split fairly evenly between those who used jarred foods (n=8) and those who made their own by pureeing or mashing fresh vegetables (n=6). Two mentioned simply chopping up cooked vegetables to offer to their child. The remaining three participants were unclear about how they first introduced vegetables to their children.

> *When it came to introducing, I mean, one of the options for WIC was you could get fruits and vegetables for them to use just fruits and vegetables, and it was a*

> *options for baby food, you could get a whole fruit or a whole vegetable or a whole can of meat, like baby food jars, so you, I had to, a lot of baby food jars from my WIC checks and I had to use them up, so I would get what I knew he ate, which was a lot of sweet potatoes, a lot of carrots, and a lot of pears. (19)*
>
> *I started with the WIC food, the canned food, the jar, like the baby jar food. 'Cause that's the first thing they learn how to eat is the jar food. (20)*
>
> *But I, um, did not buy baby food jarred. I made my own. I bought the fresh and I jar-, I did my own each meal, put it in the blender, whatever we were going to do. And that way they got a variety of stuff that I couldn't necessarily maybe get jarred. (3)*
>
> *I just pureed 'em. I did it on my own. I just pureed 'em and slowly gave it to them. And they see us eat 'em and we'd be like "Oh, they're delicious! Yum!"(4)*
>
> *I parry [puree] it. I make my own when the kids were babies and him. Fresh. I didn't buy baby food. It was all fresh made. (5)*

Feeding practices. The majority of participants (n=15) indicated that their child willingly tried vegetables, compared to 8 who indicated their child was not willing. One participant did not answer this survey question. Two interviewees mentioned specifically that their children were picky eaters, one having gotten picker with age and another having always been a picky eater. All interviewees indicated that their child was reluctant to try new or unfamiliar foods. As such, they used a variety of different feeding practices. And while the themes are discussed individually below, many parents/caregivers used multiple strategies.

The most commonly mentioned practice was having other family members model the eating behavior. The strategy of having a parent/caregiver eat a new vegetable to show a child that she liked eating it was the most commonly used technique selected from the survey (n=13) for dealing with a child's refusal to eat a vegetable. This finding is supported by information shared during the interviews when over two-thirds of interviewees (n=13) discussed how their

children were more receptive to trying a new or disliked food or vegetable when others were also eating that same food:

> *Recently, if she looks at it and doesn't like the way it looks it's kind of hard to get her to try it, but if I show her that, you know, I eat it or her dad eats it or her brother or sister then sometimes she'll try it. (3)*

> *I can buy different vegetables and try them out in different … in different recipes because we're — myself and my boyfriend — their father, are trying different meals to see what they would eat and what they wouldn't eat, as well as ourselves, to show them that eating healthy is a good thing. (15)*

> *It's something new that I'll be eating it too, just to show him, you know it's good, it's — I'm eating it, you can eat it too, cause he models a lot of my behaviors and he mimics a lot of my things so I figure, maybe, if I'm eating it too he'll eat it, and I try and I do eat a lot of the things I want him to eat. (19)*

Even though only 2 participants mentioned having received advice to keep reintroducing vegetables to their child, survey responses indicated that participants knew that this was good practice. After behavior modeling, the next most common feeding practice selected from the survey was to serve the previously refused vegetable again at another meal (n=11). Ten participants indicated they would prepare the vegetable differently and one would prepare it the same way. The practice was discussed in more detail during the interviews:

> *If she refused it, I would try to cook it another way next time, just to introduce it to her, whether I mixed it with another vegetable that she liked or maybe, you know, steamed it and just, just try it a different recipe way, cook it a different way, see if she would eat it. (3)*

> *I put things in a different dish and then he's eating them that way. Like he'll eat vegetable soup and pick stuff out of it and eat it but if I give him a green bean he's like "ugh, what's this." You know? So you gotta do it a different way. I think that works better. (1)*

One participant indicated that she would not serve her child a vegetable again if it was refused.

A less commonly used practice was that of forcing a child to try a vegetable (n=3). One interviewee explained in more detail:

> *I would try and force it on him, let him know it's okay to eat it, I don't know if that's wrong or not, but I have to let him know that he have to eat it and stuff, and don't give him nothing else until he eats it then when I does that to him then he eats it cause he know that that either it's him winning or me winning… So I don't know if that's wrong or not but I, I've had to force him sometimes to eat his vegetables. Like mom used to do us. (16)*

Three spoke of using a more direct approach by having a "no thank you helping" or a "try-me bite" rule, requiring that their child take at least one taste of a new or disliked food:

> *We do what we call a "no thank you helping." If there's no, if there's something new, everybody gets a teaspoon of it and you have to taste it before you can say "no thank you." Um, because if we just say, go "I don't like it," if you don't try it, how do you know you don't like it. So, we do the "no thank you helpings." (2)*

> *I use the "no thank you helping." Like one or two and then, um, you know feed her a different food that she does like, like um, last night we had chicken nuggets with corn and broccoli and cheese sauce on it. And she wasn't, she didn't really want the corn so, um, so she had like two bites of it and then she was done. (26)*

> *We do a "try-me" bite, but if he doesn't like it, I don't push him. (18)*

Not forcing a child to try a new vegetable was selected by 4 participants as one of the feeding strategies they used. Another related strategy not included on the survey but mentioned by 4 interviewees was using various forms of encouragement to try to coax a child to try a vegetable.

> *I would try to get him to try, tell him it's good and stuff, but sometimes it didn't work. (6)*

> *I try and encourage him to take a couple bites, actually his preschool program is doing like, they have a two-bite program when they encourage everybody to take two bites and they get read a story about it and they give each other, each kid stickers who try. So he, I guess he tried there, but at home he just won't, I just, I just try and encourage him. I mean, I eat them in front of him too, so hopefully saying "oh my God, this is so good," that doesn't work, doesn't matter. (8)*

Five interviewees brought up the practice of hiding or sneaking vegetables into the dishes they serve their children:

> *Because I can't now just give, marinate zucchini and cook on the grill, like he'll no longer eat it so I've gotta hide it. Like I make little quinoa cakes. That's a recipe I learned to hide it in there and he doesn't know that it's in there.… And I make smoothies and puree spinach and put that in there and have them drink it and they don't know it. (4)*
>
> *But like, if you get something [a vegetable or other food] that a kid don't like, if you add it with something else, like hiding it in there, they really don't know. Same way with us. (11)*
>
> *I try to mix other vegetables and stuff in with that I know he like, and sometimes I try to hide what I know he don't like, and he never knows what he's eating. (17)*
>
> *When I make spaghetti, I put a lot of vegetables in and they don't know it yet. (3)*
>
> *I would just give him more of the fruit and less of the vegetable in his spoonful and try to sneak it as much as I could (laughs), maybe put the fruit on the spoon first and the vegetables sneak it in that last little bit. (19)*

Non-feeding practices. Participants also shared experiences with several non-feeding practices related to cooking, social supports, and gardening. While not directly discussed in reference to their experiences feeding vegetables to their children, there may be some correlation between feeding and non-feeding practices.

None of the materials for this study explicitly asked about participants' cooking practices; however, in the topic came up in the majority (n=17) of interviews. Cooking was discussed in a variety of ways — those who enjoy cooking, those who are actively seeking out new ways of preparing foods (this can be from other people, from online sources, or from cookbooks), and by taking cooking classes.

> *I used to always cook. I've always been a cook my whole life until this job. So, I enjoy cooking… it is a family full of cooks… (1)*
>
> *That's how my uncle got me hooked on it [cooking]. 'Cause he's a cook, so… he shows me different recipes, how to do it. (6)*

To understand what social supports may be in place related to participants' experiences of feeding their child vegetables, the interview included a question asking specifically whether participants discussed recipes with other people. It was common for participants to talk with other people about recipes and cooking in general. Although it is not possible to determine what effect using coupons had on this behavior, this may be an indication that participants already have a system in place to support them. Most often participants discussed recipes with other family members, but also with co-workers and other friends:

> *Yeah, we — me and a couple of my cousins — trade recipes. A couple of them are actually, have gardens in their backyards now, so they, they'll also give us vegetables and we go over recipes on how to get the kids to eat them. (3)*

> *Yes, especially with my oldest daughter, she's twenty, she'll be twenty-one. She's getting ready to get her own place, so I'm trying to teach her different things to cook. She was never into cooking or having to feed herself, but now she has to, and again with my boyfriend different recipes that we want to try… (15)*

In addition to the parent quoted above who mentioned having access to a garden, two other interviewees mentioned having home vegetable gardens that their children/grandchildren would help them work in.

> *I grew up on a farm and on the reservation, so I know how to do gardens. I am a garden queen! (5)*

Vegetables purchased with farmers' market coupons. Participants reported using farmers' market coupons to purchase a variety of different vegetables. The vegetables included on this list revealed a greater diversity of items as compared to those included on the survey which was based on national data on vegetable consumption and asked about vegetables most often eaten at home. Table 3 shows the difference between these two lists. When listing vegetables most often eaten at home 8 participants listed "other" without specifying what other vegetables they ate.

The specific vegetables that were listed as “others” are included below the “other” listing within the column.

Table 3. Vegetables purchased and eaten			
Vegetables purchased with coupons (mentioned in interviews)		**Vegetables most often eaten at home (listed on survey)**	
Tomatoes	n=9	Potatoes	n=16
Green beans	n=8	Carrots	n=16
Peppers	n=8	Tomatoes	n=15
Lettuce	n=7	Corn	n=15
Corn	n=6	Lettuce (leaf)	n=13
Summer squash	n=6	Lettuce (head)	n=11
Cucumber	n=5	Onions	n=10
Zucchini	n=4	Other	n=8
Beets	n=3	Peppers	n=3
Broccoli	n=2	Broccoli	n=2
Potatoes	n=2	Herbs/spices	n=2
Winter squash	n=2	Cucumber	n=1
Cabbage	n=2	Zucchini	n=1
Collards	n=2	Cauliflower	n=1
Onions	n=2	Spinach	n=1
Spinach	n=2	Mustard greens	n=1
Carrots	n=1	Collard greens	n=1
Kale	n=1	Cabbage	n=1
Mushrooms	n=1	Beets	n=1
Dried beans	n=1	Celery	n=1
Garlic	n=1	Garlic	n=1
Garlic scapes	n=1	Squash	n=1
Parsnips	n=1		
Sweet potatoes	n=1		
Celery	n=1		

All participants indicated that the vegetables purchased with the coupons are ones they would buy without coupons; however, several mentioned that they would purchase them only if they had enough money or would purchase vegetables in as canned or frozen form instead of fresh:

> *Yeah, there are things that we do use whether we have the Farmers' Market, the WIC checks, or not. (19)*
>
> *Some of them are, I did try some new stuff, just one or two that I tried new, but other than that I'm used to purchasing every day at the grocery store. (17)*
>
> *Yes, but they're usually frozen when I do get them. They're usually cheaper frozen than they are to buy them fresh. (3)*
>
> *Well, if I had the money then I'd do it. But it's extra help for me with 'em. I get extra coupons if I use EBT, too. And that helps me a lot. (5)*

Many participants indicated they would use their coupons to purchase fruit. All participants indicated that they use the entire amount of the coupons when purchasing vegetables or fruit.

Attitude toward child's vegetable consumption

All participants expressed a belief in the importance of children's vegetable consumption. Fourteen of the twenty-threer participants who completed the demographic survey indicated that it was very important that their child eats vegetables. Seven indicated that it was important and one that it was moderately important. Fourteen of the nineteen interviewees indicated that they believed their child ate enough vegetables and all but one also stated that they wanted their child to eat more vegetables. When asked why they wanted their children to eat more vegetables, many parents/caregivers equated vegetable intake with increased nutrient intake, being healthy, and having physical strength and good eating habits:

> *Because it's healthier for 'em and it, you know, help their body and stuff. I think it would be real helpful for them to eat more vegetables. Definitely as they're growing up so they have enough vitamins and protein and stuff they need. (20)*
>
> *Well, 'cause vegetables are an important part of your whole diet. I mean, it increases the variety of the foods that you eat and it's just, there's a lot of different vitamins in vegetables that you can't get in fruits and meats and other things and junk, and the junk that he prefers. (19)*
>
> *'Cause it's good for him, it's more strength and healthy…it give him more strength and more healthy and more vitamins and, I guess, minerals or whatever… It's just more healthier for you than eating meat.(16)*

> *'Cause it's more healthy and it's teaching him good eating habits at a young age. You do it when you're young, you do it all your life, which is something I wasn't taught when I wasn't young. (11)*

Among the 5 interviewees who did not think their child should eat more vegetables, 3 stated that their child already ate enough vegetables, 1 would rather her child eat more fruit and one was concerned that her child would not want to eat meat if he ate more vegetables.

Barriers to child's vegetable consumption

Nearly all interviewees cited having some barriers that prevented their child from eating more vegetables. The most commonly cited barriers were the high cost of vegetables (n=4) and not having time to buy or prepare vegetables (n=4):

> *A lot of things that I want to buy in the grocery store when I'm there are just too expensive. We have a budget… so even if you have a job and you work hard, some things are just still too expensive. So things that you would introduce or would try, you don't. Honestly. And there are two incomes, but it is still hard. (1)*

> *Well a lot of times he [grandson] don't have it because it's like extra stuff you have to buy and you just used to buying what you need and not the little extra stuff that's more healthy. (11)*

> *… it's just not taking the time to do it…. Workin', programs, stuff involved with the kids that they get outta work, come home, rush dinner. (5)*

> *Um, just if I'm lazy and don't feel like cooking it… (4)*

Other barriers included the negative influence of others such as parents, siblings, or peers (n=3). Having a picky eater was only cited by 2 participants, as was having a parent who doesn't cook.

> *Him [older son], yeah, yeah. Because he'll, he likes to criticize food, "ew that's that looks nasty that don't taste right, that looks funny, that smells funny" and that affects her [young daughter]. (15)*

> *When I don't cook at home, we're on take out and take out don't always have vegetables. Only when I cook at home. So it's pretty much the take out thing that I be doin'. (20)*

Benefits

Making vegetables more affordable

The benefit most often cited by interviewees (n=6) was that coupons made vegetables less expensive, allowing participants either to buy vegetables when they otherwise wouldn't or to buy more vegetables than they otherwise would not be able to afford:

> *I can buy the stuff that I usually don't normally buy because it's too expensive. (11)*
>
> *I can afford to get more vegetables now and stuff, and he eats more now than he did before because I couldn't afford to buy them every week, like I would with the coupons and stuff. And I get more when I come down to the market than going to the grocery store. (16)*

Three participants indicated that they use coupons to buy vegetables that they would usually buy at the grocery store, but that vegetables at the market were generally cheaper and available in greater variety:

> *Um, because like I said, here [at the farmers' market], like here you can get 3 cucumbers for $1 and in the store it is a dollar a cucumber (2)*
>
> *It just is a lot cheaper using the coupons than actually going to the store and buying them. 'Cause they're more expensive. They're a lot cheaper here [at the market] than in the regular stores, with or without coupons. (6)*
>
> *The variety is better at the farmers' market than at the grocery store. (18)*

One participant articulated that using coupons relieved some of the potential financial risk if the vegetables purchased were not eaten:

> *I think it helps by, because at least if he [son] doesn't eat vegetables, so if I try it, it's not really a huge waste of money. (8)*

Increasing access to fresh produce

The issues of freshness came up multiple times in the interviews. Participants expressed their preference for fresh instead of canned or frozen produce and that using coupons allowed them to buy more fresh vegetables:

> *No I would rather get fresh vegetables all. I don't care for the store-boughten ones in winter and that because they're imported, to tell you the truth. (5)*

> *I'm able to shop for a variety of fresh local ingredients (8)*

Several participants mentioned that both they and their children preferred to eat fresh vegetables over other forms of vegetables:

> *I can feed more fresh fruits and vegetables and that is what they would rather eat. … Our preference is fresh, frozen, and then canned. Um, so we can do more fresh with this. (2)*

> *…kids prefer fresh vegetables. The fresher the better. (12)*

There was also a general perception that the vegetables and fruits sold at the farmers' market were fresher than at grocery stores. Related to the freshness was the benefit of having less food waste because fresher produce lasted longer when stored at home:

> *It helps as far as fresher for me to keep it longer and be able to cook without waste.… Like I'll shop at Walmart and stuff, the strawberries there aren't that fresh, they're in the refrigerator for maybe a week and then they're done with it. It seems like the food here is fresh. (15)*

Some interviewees equated the vegetables from the market with other characteristics, such as being organic, natural, and better for the environment:

> *Like 'cause I know we get to try all the organic stuff and that's better than the stuff you buy in the grocery store, so it gives us the opportunity to try all the real good stuff and not the stuff that's already processed on the shelves at the store. (20)*

> *It definitely helps us get more natural food, fruits, and vegetables in — 'cause, I mean, going to the grocery store and getting nothing but whole foods is a really big, a really hard thing to do when on a budget, I mean it's a lot easier to just grab a dollar microwave dinner or something a lot of times, but the WIC [farmers' market coupons], it helps us buy things that are a little bit more natural a little bit healthier for you, for the young one. (19)*

> *I'm more conscious about shopping more locally, 'cause I feel like it's better, just overall generally better for the environment and your health. (8)*

Exposing children and parents to new vegetables

Participants had difficulty articulating how using the coupons affected their ability to feed their children vegetables. Most did not mention their children when answering interview questions about the impact of coupon programs on how they fed their children. Some exceptions were, as mentioned above, that children preferred fresh produce or that using the coupons allowed them to expose their children to a greater variety of vegetables:

> *Yeah, we get more vegetables and, and you know, let him [grandson] know there's different vegetables than were, probably that he was given.(16)*

> *Yeah, because sometimes I'll purchase some that maybe we haven't really tried before or they're not too keen on, just to try and see if they'll like it again. (3)*

A more common experience was that using coupons exposed participants themselves to different vegetables or to new ways of preparing vegetables. This sentiment was a more consistent response from participants using CNY Health Bucks because the coupons are tied to cooking demonstrations and tasting:

> *And some of the [vegetables] here you don't even know about. You know how you use regular vegetables, but here I'm using stuff that we never tried before. And even if you see it at the grocery store you normally don't use…. This program is teaching me how to eat healthy, about stuff that I never even tried before, so if I tried, you know, you don't give it to a kid because it's like "I don't like this," well why don't you like it? Because you never tried it! But here [Food Bank of*

> *Central New York's Just Say Yes tent], they give you samples and you be like, "oh this is really good, what is it?" (11)*

> *There's vegetables myself that I tried that I thought I didn't like, the way they do the program here (points to Food Bank tent). I didn't like 'em before because I never tried 'em. It [introduces] them [grandkids] to more things and puts it out there for them to taste it, to see if they like it or not, and that gives me an idea of what to get for 'em.… If I'm not sure they like it, at least if they do it here [taste a sample at the Food Bank tent], they get to taste, they get to sample it, and then I, I pretty much know what they like and what they don't like, but there's things I've never tried before and at least if I have the coupon we can say "at least let's try it."(5)*

> *I like the program, I really do, give me time to get out the house too, and plus, you know, come down and see what they have for like the vegetables and the fruit, they show you how to prepare it and some of that I've had, it wasn't so tasty, but some of what I have is tasty, and, like I said, they add … the greens to the turnips, I still don't like it, especially when it came to the beets, (laughs), they fixed some beets and stuff and, you know, I didn't like that one, but other than that, they had some pretty good stuff they fixing, like today, they had the, the tomato, tomato salsa, yeah, that was pretty good with the chips, I really liked that. (16)*

However, some WIC participants also mentioned that they were encouraged to try a greater variety of vegetables when using the WIC FMNP coupons:

> *I did try some new stuff, just one or two that I tried new. … The person at the WIC office told me to try something new, try something different, something. I said "OK, make sure I do that." So pretty much what I did today. (17)*

Gaining cooking knowledge & skills

The fact that the Food Bank of Central New York demonstrated and distributed recipes to CNY Health Bucks recipients was seen as a having an impact on both parents' and children's vegetable intake.

> *Well, we found some new recipes last year that he really enjoys, like watermelon salads and stuff like that. And if I didn't come here then I would have never known to put those things together like that. But like I said, the recipes really help because sometimes you're looking for something creative, you know? (1)*

> *But we generally try all the recipes. I think last year we made all the recipes from here [Food Bank Just Say Yes program] except two. I've taken some of the recipes to, like, a family reunion or a church gathering, um, that we get from here. (2)*

> *Like I said, a lot of this stuff I never ever even tried it, not because it wasn't good, but it's because I don't like this, I don't like that, and you don't want to try nothing new. But coming here, and they demonstrate, you like, oh wow, I can't wait to try that, so I go home and I save my recipes and now I find myself making it, something I never did before and never even knew. (11)*

Impact on child's vegetable intake

Of the 16 participants who answered the interview question about whether or not they thought using coupons has an effect on their child's vegetable intake, many (n=7) were not able to articulate any effect and did not give a specific response. Six thought that their child ate more vegetables, 2 thought there was no impact, and 1 was unsure if there was any impact.

Wanted Supports

Interviewees had difficulty articulating what would be helpful for them to increase their child's vegetable intake. Some answers focused on structural support such as lowering the cost of vegetables and increasing the amount of benefits they receive, both general WIC benefits and the dollar amount of the FMNP coupons.

> *Well, especially in the stores, lower cost. Lower cost of the produce. Um, because like I said, here [at the farmers' market] … you can get 3 cucumbers for $1 and in the store it is a dollar a cucumber. (2)*

> *WIC giving out more. I would definitely claim more. (4)*

Other responses focused more directly on being able to increase their child's exposure to vegetables. One participant expressed her wish for a support network for parents who are struggling with feeding their children.

> *Maybe like, learning what other moms have done to get, sneak vegetables in here and there. That might help. Mom-to-mom, hey listen, my kid's your age and this works right now, maybe you can try it for a little bit and see if it'll work. (19)*

Another participant thought that learning how to cook more vegetables would be helpful.

> *Learning how to cook more of 'em. I really don't know how to cook zucchini, um, eggplant and some other stuff. I really don't know how to cook, so yeah. I have to get the recipes and have people talk me through the steps of how to make it. (20)*

On the whole, however, interviewees expressed their appreciation for the coupon programs and their hope that such programs continue to be offered in years to come.

DISCUSSION

It is unclear whether the use of farmers' market coupons had a positive impact on levels of vegetable consumption by the children of the study participants. Some participants reported a positive impact; however, the majority had difficulty making this association. What What may be more helpful is looking at the broader scope of this project — the vegetable feeding practices within the study population — to understand current behaviors that both support and hamper these parents' efforts to increase their children's vegetable intake. Doing so may provide some additional guidance for the programs and organizations distributing the coupons as well as for other professionals working to increase children's vegetable intake within similar populations.

The vegetable screener used in this study may have led to both underreporting (due to unanswered questions) and over-reporting (due to misunderstandings of vegetable quantities listed); however, the results for vegetable intake by participants' children is higher than national trends of low vegetable consumption.[65,66,67] It is unclear as to why this may be, but this population may be more inclined to purchase vegetables and to serve them to their children. To help facilitate this process, it is important that parents understand general trends in the

development of children's food preferences and which feeding practices have greater success of increasing children's vegetable intake. In their summary of current research into ways to increase children's vegetable consumption, Fisher and Dwyer[68] underscored the importance of understanding the complexities of vegetable acceptance as seen through the domains of the social-ecological framework: individual (taste preferences), family (feeding practices), and policy (food access and supports). It is helpful to look at the experiences of study participants within this framework to see where there are successes and shortcomings in their efforts to teach their children to eat vegetables.

TASTE PREFERENCES

Children's taste preference was discussed broadly by participants in the context of their children's willingness to eat vegetables and to try new foods. The majority of participants indicated their child willingly tried vegetables when first introduced. It is important to note that participants were not asked to identify specific ages related to these behaviors, so it is difficult to tie into existing literature beyond making some generalizations. However, feeding data from WIC participants in the 2008 Feeding Infants and Toddlers Study (FITS), a similar demographic to this study, shows that the majority of infants between the ages of 6-8.9 months ate at least 1 serving of vegetables per day[69] which is in line with the current recommendations from the American Academy of Pediatrics.[70]

Food preferences tend to shift from infancy to toddlerhood as children develop greater preference for foods with more complex textures (ie, lumpy or diced).[71] The preference for new and different flavors and textures doesn't last, however, and as they age, children begin to exhibit behaviors in which they are reluctant to try new or unfamiliar foods. All study participants cited this as being the case for their children, although the specific age at which this occurred was not

assessed as part of this study. Birch cautions that parents should not conflate children's inherent neophobia with general food pickiness. She states:

> *"Neophobia and its reduction play an important role in shaping the food acceptance patterns of young children, because as the transition to the adult diet begins, all foods are new. …. However, neophobia does not reflect a fixed dislike for a new food, but a transitory one that may be altered via subsequent food experience. The view that the neophobic response is normal and adaptive also implies that when children reject new foods, they are behaving normally, and should not be labelled as 'finicky' or 'fussy eaters'."*[27]

The risks of assuming that a child's neophobia is a fixed behavior related to pickiness has long-term consequences on the development of children's taste preferences. Pickiness, while not mentioned frequently by study participants as affecting their child's eating, can be a challenge for parents to navigate. Research findings show that children's pickiness peaks at age 38 months[72] and that the number of liked foods does not increase as children age, with vegetables introduced to children after age 48 months being more likely to be disliked.[73] It is important that parents understand these trends in their children's taste development and modify their feeding practices accordingly to maximize vegetable exposure before children experience neophobia. Parents should be encouraged to know that even though children labelled as being picky eaters have lower overall intake of fruits and vegetables, picky toddlers were more likely to eat these foods when their mothers did too.[73] Repeat exposure and repetition have been shown to help overcome pickiness.[74]

Research has shown that the form in which vegetables are eaten affects children's taste preference for vegetables. In their study of the development of children's food preferences, Skinner et al found that of the top 24 disliked foods, 17 were vegetables and that as children aged, they tended to dislike cooked vegetables more.[74] Other research has looked at associations between early exposures to different food textures and later vegetable intake. A small study

involving 12 infants looked at food preference in relation to exposure to different food textures, with greater acceptance of more complex textures (ie, diced) after prior exposure through a structured progression from smooth to lumpy. [72] In a study of nearly 8000 mothers in the UK, researchers found that children who were fed home-cooked vegetables at 6 months of age had greater vegetable intake at 7 years with the conclusion that by eating homemade foods, children are exposed to not only a greater variety of vegetables but also to a greater variety of flavors and textures; no association was found with commercially prepared foods.[75]

Children's food preferences do not develop in a vacuum and often reflect the attitudes and preferences within their families, and most people recognize the importance of vegetables as part of a healthy diet. All of the parents in this study believe it is important that they and their children eat vegetables, with many indicating their perception that their child currently ate enough vegetables. While social pressure may have influenced their responses, other studies have also documented similar responses by mothers even though, as documented here, their children do not meet the recommended intake.[76] Parents are often seen as playing the role of "gatekeepers" because of their control over what types of food come into the home[77] with the assumption that parents will primarily have available in their homes those foods that they themselves enjoy eating. The flip side to this is that parents will not have regularly available those foods that they dislike.[74] This topic was addressed by participants who mentioned their own unfamiliarity with some vegetables, most commonly discussed in reference to being able to sample recipes as associated with one of the coupon programs. It is not a stretch to associate parental taste preferences — their not liking or even not knowing that they may like certain vegetables — as a factor that has the ability to limits the development of their children's taste

preferences. Programs that help parents overcome this limitation can have potential impact on children's food habits.

FEEDING PRACTICES

Taste preferences are only part of the puzzle. How foods are introduced also plays a significant role in children's vegetable intake. This involves looking not just at the physical act of feeding children, but also understanding how parents are prepared for this process — what information they have as well as what information they seek out and from whom. Many new parents are given information about feeding their children during infancy. It is less clear, however, what additional sources may be needed as children enter different developmental phases. Study participants reported receiving feeding information from a variety of sources, with the most commonly-cited source being from a professional, either a physicians or nutritionist. (While it is not clear if participants were referring to registered dietitians when they used the term "nutritionist," several did specifically reference WIC nutrition counselors as the source of their feeding information). It was nearly just as common for participants to state that they didn't seek out information from anyone on this topic.

Research into mothers' sources of feeding information has shown that who mothers turn to for feeding information changes depending on the age of their child. While this study focused on children between the ages of 2 and 5, the specific question asking about sources of feeding information was not asked in reference to a specific age, but rather to when vegetables were introduced. It could be that participants relied more on professional sources when their children were infants, as has been found by other studies.[78,79] and didn't feel the need to ask for advice on the subject of feeding vegetables in particular. This pattern is partially supported by Carruth and

Skinner[80] who, in their study of sources of information for feeding young children, report that women relied less on professional sources after their children were 2 months old, with mothers instead turning to friends and relatives for information. The researchers found that the influence of family stayed consistent throughout the timeframe of the study. Interestingly, participants in this study never mentioned turning to friends for feeding information and only a few mentioned getting information from parents or other family members. Data analysis did not assess whether participants were first-time mothers, had older children, or were grandparents, a distinction that may have affected their responses.

Professionals from different specialties (public health vs clinical practitioners) may provide different feeding advice to parents[67] and that advice can be poorly communicated and not fully encompass the needs of a particular family,[44] making it a challenge for families to remember and put into practice any advice they are given. Similar to findings in other feeding studies,[81] participants had difficulty articulating what the feeding advice was that they received. Parents and caregivers in this study discussed advice in general terms such as the need to introduce vegetables before fruits, to introduce foods one at a time, and to keep introducing a food even if it isn't liked at first. While this advice is consistent with information provided by groups such as the Robert Wood Johnson Foundation[82] and the Academy of Nutrition and Dietetics,[83] it doesn't capture other important issues such as introducing a variety of textures[84] or using responsive feeding and parenting practices.[85]

When looking at how study participants introduced vegetables into their children's diets, participants were fairly evenly split between using jarred baby foods and pureeing or mashing cooked vegetables. Again, this study did not specifically ask about children's ages when vegetables were introduced, so it is difficult to make a nuanced comparison to other study

findings; however, this finding may differ from those reported by Fox et al[86] in their review of 2002 FITS data that showed a more significant difference between the intake of commercially prepared baby food vegetables and cooked vegetables at different periods from infancy through toddlerhood. Their findings showed that commercially prepared baby food vegetables were the leading source of vegetable intake until children were 8 months old, after which cooked vegetables were more commonly eaten. It could be that for this study, the participants who use farmers' market coupons to purchase fresh produce were more motivated to make their own baby food. Study participants receiving WIC benefits did mention getting jarred foods as part of their food package; however, data analysis did not separate participants by type of coupons used, so it is unclear how this distinction played out among study population. As previously discussed, the form in which vegetables are introduced may have an impact on children's vegetable intake later in childhood and beyond. Studies have found that low levels of FV intake in infancy, regardless of its form, predict low vegetable intake as children age[87] and that vegetable intake deficits in toddler and preschool years tend to grow more severe as children age.[67]

When looking at the specific vegetables participants introduced to their children, there are some similarities with other research findings. Participants indicated they were advised to introduce sweet potatoes or carrots as first vegetables, and many did so. Other studies have documented that deep yellow vegetables (carrots, sweet potatoes, pumpkin, winter squash) made up the highest daily intake among the youngest group of children,[86] with the trend holding for both WIC participants and non-participants.[69] White potatoes, which are often listed as the most commonly consumed vegetable by children of many age ranges[69,86,88] were rarely mentioned by interviewees; however, data from the survey and children's vegetable screener shows white potatoes are often eaten at home and are frequently eaten by participants' children. It may be

that study participants have different dietary patterns than the general population. This difference can be seen by comparing lists of vegetables most commonly eaten vegetables by participants (potatoes, carrots, tomatoes, corn, leaf lettuce, head lettuce, and onions) with national trends as reported by the USDA (potatoes, tomatoes, onions, head lettuce, carrots, corn, and leaf lettuce). [89]

When faced with new food or vegetable refusals, many participants indicated that they used role modelling and positive encouragement to encourage their children to eat vegetables. It is possible that responses may have been biased by the study survey which included a list of feeding practices; however, these strategies are similar to those used by parents in other feeding studies.[81] Another commonly-used strategy among study participants was to serve a previously offered vegetable again, either in the same or different form. It was not determined, however, how many times they would keep reintroducing a vegetable before determining that their child did not like it. While research has shown that it takes up to 10 exposures before a child will accept a new or previously rejected food,[30,31] parents will often stop reintroducing a food after fewer than 3 offerings.[74]

Several participants also mentioned the use of more coercive feeding strategies. Only one specifically stated that she would force her child to eat a food, a practice specifically discouraged by the World Health Organization,[85] while several others mentioned the use of a "no thank you helping." When looked at through the lens of parenting strategies, this more forceful approach may be seen as being authoritarian.[90] While this strategy is often associated with creating food aversions in older children, the reverse may be true for preschool-aged children, where the use of more controlling food practices has been shown to have a positive impact on children's eating habits.[91] The practice of hiding vegetables in dishes such as

smoothies or in pasta sauces was mentioned by several study participants. While this practice has been studied as a strategy for increasing vegetable intake,[92] researchers caution that although children may end up eating more vegetables this way, their ability to recognize and become familiar with and subsequently like individual vegetables may be impaired.[93]

Unique to this study was also insight on non-feeding practices of the study population as they potentially relate to children's vegetable intakes. The practice of cooking, while not a specific question in any of the study tools, was brought up by the majority of participants, with several making a connection between their cooking practices and their children's vegetable intake. Cooking has previously been studied in the more general context of its correlation with improved diet quality and reduced food expenditures[94, 95] as well as more specifically to increased FV intake.[96] When looked at in context of the earlier discussion of research showing that children served home-cooked FVs during infancy have greater FV intake in later childhood, a compelling case could be made for programs that promote parents' cooking skills. Cooking also has a social aspect that can help support parents in their feeding efforts. Participants discussed how they often shared recipes with others. Recipe use may vary among different populations, however. Trieman et al found that many WIC participants had limited familiarity with using recipes and that the rate was even lower for African American women,[97] a factor that should be taken into consideration when programs seek to incorporate recipes into the extra supports that may be provided along with coupons or other incentives.

FOOD ACCESS AND SUPPORTS

In both this study as well as others, one of the most commonly cited barriers to increased vegetable intake is the high cost of fresh produce.[12,13] One of the primary goals of coupon programs is to reduce this cost. Participants stated that using coupons allowed them to either buy

vegetables they wouldn't otherwise purchase or to purchase more than they would otherwise. Study participants stated their perception that the cost of vegetables at the farmers' market was better than at grocery stores, even without the use of coupons. This contrasts with other studies in which farmers' market prices were determined to be higher than in stores;[98] however, it is worth noting the potential for regional price variability in different study locations.

Of particular interest was that numerous study participants expressed their own and their children's preference for fresh vegetables, stating their belief that those available at the farmers' market were of better quality than those in grocery stores and thus stayed fresh longer. This finding is in contrast with other studies in which WIC participants stated their perception that fresh vegetables tended to spoil faster.[97,99] These studies, however, were not looking at produce from farmers' markets. Differences in the quality of produce sold at farmers' markets compared to conventional grocery stores may be due to differences in travel time and distance when transporting FV from where it is grown to where it is sold.

More broadly, however, the use of coupons or other financial incentives has been shown to be correlated with higher rates of vegetable consumption.[52-55] This effect may be even greater when incentives are targeted for use at farmers' markets[100] and for individuals who are already motivated to eat vegetables.[101] There is also interest in having even higher amount of financial support for purchasing fresh produce. Study participants expressed this desire and it was supported by research showing that higher subsidy rates are used when provided for FV purchases at farmers' markets.[100]

STRENGTHS AND LIMITATIONS

One strength of this study was its effort to expand research into the successes of incentive programs to increase vegetable consumption by looking at an understudied population —

families with young children. The use of a mixed-method design allowed for a simultaneous exploration and analysis of the phenomenon of study. Because both quantitative and qualitative methods were used, results were able to be triangulated. Consequently, the findings included a broader contextual framework through which to view the vegetable feeding practices within this population. The use of semi-structured interviews allowed for participants' voices to directly inform the findings and provided a more nuanced understanding of their use of vegetable incentive programs as they related to their experiences of feeding vegetables to their children.

The study also had several limitations. The vegetable screener used to collect data about the quantity of children's vegetable consumption led to both under-reporting and over-reporting of actual intake. This prevented the researchers from documenting and fully understanding the vegetable eating patterns of this population. Additionally, there were several barriers that may have prevented the researcher from gathering a richness of data that this type of study needs. One such barrier was the socioeconomic and racial differences that existed between the study participants and the researcher who administered the study tools and conducted the interviews. This may have led to some discomfort or hesitation on the part of the participants, who may not have felt comfortable discussing personal information. Another such barrier was the fact that participants were not given much time to reflect on their answers before responding. The study materials were administered at the time the researcher inquired about their interest in participating and participants may not have been able to fully recall information about the phenomenon of study. The last barrier may have been from participants feeling an unintended pressure to say positive things about the coupon programs, not wanting to seem critical or unappreciative, even though the researcher explained that she was not associated with either organization that distributed the coupons. Lastly, due to the small sample population from one

farmers' market site, the study's findings are not generalizable. However, the purpose of the study was to better understand these incentive programs within families with young children and it does provide some insight into the benefits and barriers to fruit and vegetable intake within a vulnerable population.

CONCLUSION

While it is not clear what direct effect the use of farmers' market coupons has on children's vegetable intake, this study illustrated that coupons are just one of a series of interrelated factors that influence parents' vegetable feeding practices. It is also not clear if study participants were more motivated to purchase and serve vegetables at home; however, having access to lower-cost, high quality produce removes one significant barrier to doing so. There are other individual, family, and policy barriers that also need to be considered when dietetics professionals consider strategies or programs to help increase children's vegetable intake and seek to support parents' efforts to do so. Programs that distribute coupons or other vegetable incentives to parents/caregivers of young children may further enhance potential increases in vegetable consumption by addressing some of these barriers such as helping parents understand typical trends in children's taste development, helping parents overcome their own food dislikes, teaching parents about effective feeding strategies, and offering additional financial supports.

APPENDIX

How does parental participation in farmers' market coupon programs affect children's vegetable consumption? Date: _____
Participant #: _____

Background Information	
1. What is your sex/gender identity?	□ Male
	□ Female
	□ Other, specify: _____
2. What is your age?	_____
3. Which of the following best describes your race/ethnicity? (select all that apply)	□ White
	□ Hispanic / Latino
	□ Black / African American
	□ Native American / American Indian
	□ Asian / Pacific Islander
	□ Other, specify: _____
4. Whatis the highest level of school you have completed or the highest degree you have received?	□ High school incomplete or less
	□ High school graduate or GED
	□ Some college (community college or associate's degree)
	□ Four year college degree / bachelor's degree
	□ Some postgraduate or professional schooling, no postgraduate degree
	□ Postgraduate or professional degree
5. Which of the following best describes your annual household income?	□ Less than $15,000
	□ $15,000 - $24,999
	□ $25,000 - $49,999
	□ $50,000 - $74,999
	□ More than $75,000
6. Which of these best describes you?	□ Married
	□ Living with partner
	□ Divorced
	□ Separated
	□ Widowed
	□ Never been married
7. How many people, including yourself, live in your household?	
	_____ people
8. How many people, including yourself, are adults age 18 or older?	
	_____ people
9. Are you the parent or guardian of any children currently living in your household?	□ Yes
	□ No
10. How many children of each age range are currently living in your household?	_____ newborn - 1 year old
	_____ 2 years old - 5 years old
	_____ 6 years old - 18 years old
11. Do you have any children currently enrolled in Head Start / Early Head	□ Yes
	□ No

12. Which of the following best describes the food eaten in your household?	☐ Enough of the kinds of food we want to eat
	☐ Enough but not always the kinds of food we want
	☐ Sometimes not enough to eat
	☐ Often not enough to eat
Vegetable Questions	
13. How long have you participated in a farmer's market coupon program (WIC FMNP checks, Healthy Bucks, FreshConnect, EBT tokens, etc.)?	_____ years
14. What vegetables do you eat most often at home? (Select all that apply)	☐ Potatoes
	☐ Tomatoes
	☐ Onions
	☐ Lettuce (head)
	☐ Sweet corn
	☐ Carrots
	☐ Lettuce (leaf)
	☐ Other(s), specify: _____
15. How important is it that you regularly eat vegetables?	☐ Not important
	☐ Slightly important
	☐ Moderately important
	☐ Important
	☐ Very important
15. How important is it that your children regularly eat vegetables?	☐ Not important
	☐ Slightly important
	☐ Moderately important
	☐ Important
	☐ Very important
16. How did your child react when you started introducing vegetables into	☐ My child willingly ate vegetables
	☐ My child resisted eating vegetables
17. If your child refused to try a new vegetable, what would you do? (Select all that apply)	☐ I would force my child to try the new vegetable
	☐ I would not force my child to try the new vegetable
	☐ I would eat the new vegetable to show him/her that I liked eating it
	☐ I would serve the same new vegetable the same way at another meal
	☐ I would serve the same new vegetable differently at another meal
	☐ I would not serve the new vegetable again

Date: _____
Participant #: _____

1. Over the last month, how often did your child eat lettuce salad (with or without other vegetables)? Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

2. Each time your child ate lettuce salad, how much did she/he eat?

☐ about 1/4 cup

☐ about 1/2 cup

☐ about 1 cup

☐ more than 1 cup

---

3. Over the last month, how often did your child eat French fries or fried potatoes? Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

4. Each time your child ate French fries or fried potatoes, how much did she/he eat?

☐ about 1/2 cup
(half of small order)

☐ about 1 cup
(small order)

☐ about 1 1/2 cups
(medium order)

☐ about 2 cups
(large order)

5. Over the last month, how often did your child eat other white potatoes? (baked, boiled, mashed potatoes, white potatoes that are NOT fried)
Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

6. Each time your child ate these potatoes, how much did she/he eat?

☐ about 1/4 cup (half of a small potato) ☐ about 1/2 cup (1 small potato) ☐ about 1 cup (1 medium potato) ☐ more than 1 cup (1 large potato)

---

7. Over the last month, how often did your child eat cooked dried beans? (baked beans, bean soup, refried beans, pork & beans, other bean dishes)
Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

8. Each time your child ate these beans, how much did she/he eat?

☐ less than 1/4 cup ☐ about 1/4 cup to 1/2 cup ☐ about 1/2 cup to 1 cup ☐ more than 1 cup

9. Over the last month, how often did your child eat other vegetables? DO NOT COUNT lettuce salads, white potatoes, cooked dried beans, rice, vegetables in mixtures such as sandwiches, omelets, casseroles, Mexican dishes, stews, stir-fries, soups, etc. Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

10. Each time your child ate other vegetables, how much did she/he eat?

☐ less than 1/4 cup ☐ about 1/4 cup to 1/2 cup ☐ about 1/2 cup to 1 cup ☐ more than 1 cup

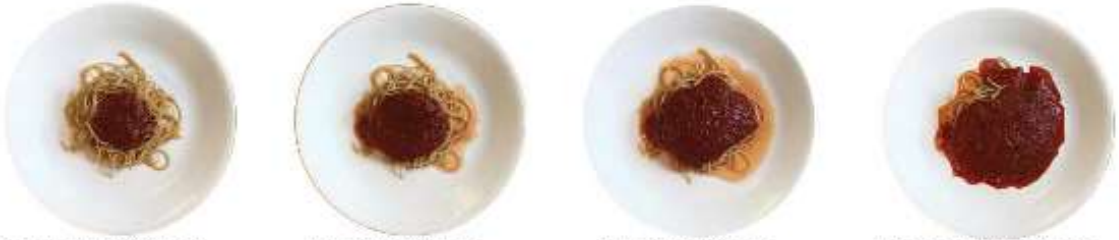
---

11. Over the last month, how often did your child eat tomato sauce? Include tomato sauce on pasta or macaroni, rice, pizza, and other dishes. Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

12. Each time your child ate tomato sauce, how much did she/he eat?



☐ less than 1/4 cup ☐ about 1/4 cup ☐ about 1/2 cup ☐ more than 1/2 cup

13. Over the last month, how often did your child eat vegetable soups? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables. Select ONE of the following:

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

14. Each time your child ate vegetable soup, how much did she/he eat?

☐ less than 1/2 cup

☐ 1/2 cup to 1 cup

☐ 1 cup to 1 1/2 cups

☐ more than 1 1/2 cups

---

15. Over the last month, how often did your child eat mixtures that included vegetables, how much did she/he eat? Count all foods such as sandwiches, casseroles, stews, stir-fries, omelets, and tacos.

☐ Never ☐ 1-3 times last month ☐ 1-2 times per week ☐ 3-4 times per week ☐ 5-6 times per week

☐ 1 time per day ☐ 2 times per day ☐ 3 times per day ☐ 4 times per day ☐ 5 or more times per day

How does parental participation in farmers' market coupon programs affect children's vegetable intake?

Date: _____

Participant #: _____

Interview Questions

Part 1: Experience with Incentive Programs

I would like to ask you some questions about programs that offer benefits, such as coupons or rebates, to help you purchase fresh vegetables at farmer's markets. I will first describe the program and then I will ask you some follow-up questions. (Show participants Farmers' Market Coupon Program sheet)

Many of the follow-up questions will focus on your children. I am interested in children only between the ages of 2 – 5. When answering these questions, please do so with your child/children within this age range.

1. Tell me about your participation with (*incentive program*)
    a. How did you first find out about (*incentive program*)?
    b. How long have you participated?
    c. How does having access to vegetables in this program affect the way you feed your children?
    d. How has it impacted their vegetable consumption?
    e. What are some examples of vegetables you have purchased with (*incentive program*)?
        i. Are these vegetables you would have purchased <u>without</u> (*incentive program*)?
    f. What quantity or amount of vegetables have you received with (*incentive program*)?
    g. Has using this program lead to any other changes in the way you use vegetables?
        i. Try new recipes?
        ii. Use different storage techniques (freezing, canning)?
        iii. Talk about vegetables or recipes with others?
2. Do you participate in any other vegetable incentive programs?

Part 2: Resources Used or Needed

Now I would like to ask you some questions about when you started to introduce solid foods into your child's diet. If you have more than one child between the ages of 2 - 5, please just focus on one child when answering.

1. Tell me about any advice you received on how to introduce vegetables into your child's diet.
    a. Who was the advice from?
    b. What was the advice?
    c. Are you aware of recommended feeding guidelines?
2. What would be helpful to you to increase the amount and/or variety of vegetables your child eat?

Part 3: Children's Vegetable Consumption, Past and Present

The last series of questions are about how you child reacts to eating vegetables, both when you started to first feed him/her solid foods as well as currently.

1. When it came time to start feeding your child solid foods, how did you go about introducing vegetables?
    a. How did your child react?
    b. Please describe what would you do if/when your child refused to try/eat vegetables.
    c. In general, how did your child react when you served them new or unfamiliar foods?
2. Tell me about feeding your child vegetables today.
    a. For most days of the week, do you think he/she gets enough vegetables in their diet?
    b. Do you want him/her to eat more vegetables? Why or why not?
    c. What prevents him/her from getting more vegetables in their diet?

Farmers' Market Coupon Programs

CNY Health Bucks

- $2 coupon available to SNAP eligible individuals and emergency food recipients
- Used for locally grown (NY) fresh fruits & vegetables
- Can be used in with other benefits: FCC, FMNP, EBT tokens
- Available at certain Food Bank education programs and at EBT stations at participating markets

FreshConnect Coupon (FCC)

- $2 coupon available to SNAP participants buying EBT tokens and to veterans
- Used for any SNAP eligible items at the market
- Can be used in with other benefits: Health Bucks, FMNP, EBT tokens
- Available at EBT stations at participating markets

WIC Farmers' Market Nutrition Program (FMNP)

- $4 check available to WIC participants
- Used for locally grown (NY) fresh fruits, vegetables, and herbs
- Can be used in with other benefits: Health Bucks, FMNP, EBT tokens
- Available from local WIC office

EBT Token

- $1 SNAP tokens available to SNAP participants
- Used for any SNAP eligible items at the market
- Can be used in with other benefits: Health Bucks, FMNP, EBT tokens
- Available at EBT stations at participating markets

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VITA

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EDUCATION

Master of Science student in Nutrition Science, Syracuse University, August 2016 – present.
Thesis title: Understanding vegetable feeding practices among families with young children using farmers' market coupon programs: Does participation increase children's vegetable consumption?

Master of Landscape Architecture, State University of New York College of Environmental Science and Forestry, Syracuse, NY

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ACADEMIC EMPLOYMENT

Research Assistant, Nutrition Science, Syracuse University, August 2016 – present.

- Assisted with Get FRUVED, a USDA-funded grant studying health of college students.
- Coordinated undergraduate research assistants in data collection, including physical assessments and campus environmental audits.
- Developing training materials for and managing national roll-out of Healthy Campus Environmental Audits.
- Provided assistance and teaching support for NSD 497 Research Experience.

PUBLICATIONS

Brubaker, H. A. and Brann, L. S. (2018). Understanding vegetable feeding practices among families with young children using farmers' market coupon programs: Does participation increase children's vegetable consumption? Thesis manuscript.

PRESENTATIONS AT PROFESSIONAL MEETINGS

Brubaker, H.A. and Brann, L. S. Understanding vegetable feeding practices among families with young children using farmers' market coupon programs: Does participation increase children's vegetable consumption? Selected poster presentation at the annual meeting of the Society for Nutrition Education and Behavior, Minneapolis, MN, 22 July 2018.

PROFESSIONAL MEMBERSHIP

Academy of Nutrition and Dietetics

Society for Nutrition Education and Behavior