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## EVALUATION OF A SNAP-ED FAMILY MEAL BASED NUTRITION EDUCATION CURRICULUM

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EVALUATION OF A SNAP-ED FAMILY MEAL BASED  
NUTRITION EDUCATION CURRICULUM

BY

AARON SLADER

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF

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IN

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2014

MASTER OF SCIENCE IN NUTRITION AND FOOD SCIENCES  
OF  
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UNIVERSITY OF RHODE ISLAND  
2014

## ABSTRACT

**Background:** Families who have more frequent family meals make more healthy food selections and their children are less likely to be obese than families who eat together less frequently. A nutrition education curriculum that results in increased family meal frequency could be an effective approach to reducing obesity in children through improved nutrition eating behaviors.

**Objective:** The purpose of this study was to evaluate the effectiveness of a SNAP-Ed 4-week family meal focused nutrition education pilot curriculum to improve family meal frequency among low-income parents in Rhode Island.

**Design:** This study used a prospective, quasi-experimental design. Low-income parents at one site participated in a SNAP-Ed sponsored 4-week family meal focused nutrition education pilot curriculum intended to improve family meal frequency and quality. Low-income parents at another site participated in a SNAP-Ed sponsored 4-week traditional nutrition education curriculum.

**Participants/Setting:** Parents with an elementary aged child in grades K through 3 (N=35) at Rhode Island Children Opportunity Zones (COZ's) were recruited and provided a family meal focused curriculum (n=17) or a standard nutrition education curriculum (n=18). Participants were required to be the primary meal preparing caregiver and were required to provide survey data for 1 qualifying child. Participants were mostly female (97%), mostly white (54%), all low-income, with most receiving SNAP benefits (67%).

**Main outcome measures:** Frequency and quality of family meals and dietary intakes of the children were reported pre- and post-intervention in surveys conducted at the start of week 1 and end of week 4 lessons.

**Statistical Analyses Performed:** The primary analysis used a repeated measures ANOVA which assessed the time by group interaction for the primary outcome of family meal frequency, the secondary outcome of environmental quality of the meal, and the tertiary outcomes of child diet quality intake. Sugar-sweetened beverage intake was assessed using a chi-squared test. Self efficacy for increasing family meal frequency was measured at post-survey and was compared using an independent t-test.

**Results:** There was no significant increase in family meal frequency within or between groups and no between group difference in meal quality of dietary variables. Significant improvements in mealtime environment quality were observed within groups. Participants in the control group reported a significant increase in their enjoyment of family meals following the intervention. Both experimental and control subjects reported significant reductions in television viewing during meals and a significant increase in pre-mealtime planning within groups. Participants in the experimental group reported a significant increase in ounces of whole grains and cups of fruit consumed per day with no between group differences.

**Conclusion:** On average, most families met the target number of family meals ( $\geq 6$  meals per week), and there was no increase infrequency. There is a need for further research in this area, particularly with more strategies targeting the appropriate barriers to families eating together more frequently.

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## **PREFACE**

This thesis was prepared in manuscript format following the author guidelines for the *Journal of Nutrition Education and Behavior*. After submitting this thesis, the manuscript may be submitted for publication.

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**MANUSCRIPT:**

**“Evaluation of a SNAP-Ed Family Meal Based Curriculum”**

By

Aaron Slader RD, LDN

**Prepared for submission to *Journal of Nutrition Education and Behavior***

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## INTRODUCTION

Overweight and obesity have become more prevalent in the U.S. population over the course of the last three decades (1). The National Health and Nutrition Examination Survey (NHANES) tracks trends in the prevalence of obesity in the United States. In 2012, NHANES found that approximately 34.9% of U.S. adults were obese, an increase from 15% in 1976 (1). Similar trends in the prevalence of obesity in children have been observed by NHANES. The prevalence of obesity increased from 5.0% to 8.5% between 1976-1980 and 2010-2012 in young children and from 6.5% to 17.7% among children between the ages of 6-11 during this period. Approximately one in five children in Rhode Island starting kindergarten is overweight (2). In Rhode Island, approximately one in five children for eat fruits and vegetables in the recommended amount of five or more times per day, and more than one quarter watch three or more hours of television per day (2) despite the recommendations for two hours or less (3). Poor diet quality and the increased sedentary lifestyle of children in RI contribute to the increases in overweight and obesity.

Obesity is linked to many preventable chronic diseases including hypertension, diabetes, and heart disease (4). These chronic diseases account for 75% of all medical expenses (4). To prevent obesity, interventions should be designed to help children develop healthy eating and activity behavior (5). The family meal is important in the development of healthy eating behaviors. Researchers have found relationships between the frequency of family meals and the choices that young people make regarding healthy food selections, positive family values, and avoidance of high-

risk behaviors (6-19). Middle-school students with frequent family meals consumed fewer soft drinks, were less concerned with body weight, and had higher self-efficacy for healthy eating than middle-school children with infrequent family meals (7). Children and adolescents who ate more frequent family meals were more likely to eat breakfast than those with less frequent family meals (10). Breakfast consumption is associated with a reduced prevalence of obesity in children (5). Teens who have frequent family meals have higher consumption of fruits, vegetables, grains, calcium-rich foods, and less soft drink consumption than teens with infrequent family meals (9,11-13). A cross-sectional analysis of over 16,000 children ages 9-14 found that boys and girls who ate dinner with their families every night had almost a full serving more of fruits and vegetables per day, consumed less fried food and soda, and used multivitamins more than children who reported having family dinner never or sometimes (11). This supports the finding that nutritional patterns in children are predictive patterns in adolescence (9).

There is conflicting evidenced about the relationship between frequency of family meals and risk of obesity at certain ages. Two studies found that adolescents who reported they rarely eat family dinners were more likely to be overweight than adolescents who report that they eat family meals five to seven times per week (10-12). However, one study found that family meals eaten by students during high school were not associated with overweight or obesity in adulthood (13). This suggests children who initiate family meals later in life may not receive the same benefits as children who start family meals at younger ages.

There is a negative correlation between frequency of family meals and frequency of high-risk behaviors such as substance abuse, sexual activity, depression, suicide, antisocial behaviors, violence, school problems, binge eating, purging, and excessive weight loss (14). However, these high-risk behaviors may be associated with socioeconomic status (SES) (14). Neumark-Stainer and colleagues found that family dinner was positively associated with SES (15). This suggests that interventions to increase family meal frequency should be targeted towards children of low-income families. Besides SES, television viewing during meals is also associated with decreased nutritional quality of meals. Fitzpatrick and colleagues found that family meals were associated with higher intakes of fruits, vegetables, and milk among families who did not watch television during meals. Fewer fruits and vegetables were consumed among families watching television during meals (16). Boutelle and colleagues found that having the television on during mealtimes was associated with higher a fat intake and fewer servings of fruits and vegetables among 277 adults with children (17).

Neumark-Sztainer and colleagues found that work schedules, sports involvement, homework, hanging out with friends and watching television all interfered with adolescent participation in family meals (18). The most common barriers to eating family meals are “lack of time”, as well as adapting to what is perceived as an increasingly busier after-school schedule of the children (19). Perceptions about “lack of time” and after-school schedules may be more important than actual schedule issues. Reichert et al. found that the act of perceiving barriers (i.e.

“lack of time) to exercising resulted in less physical activity and the greater the number of barriers perceived the lower the physical activity (20).

Improving the family mealtime experience and encouraging families to eat together more often are now part of many organizations and health promotion programs. The American Medical Association’s (AMA) expert panel on childhood obesity recently recommended that healthcare practitioners “encourage family meals on most, if not all, days of the week” (21). Although most studies of family meals have been descriptive (6-18), two intervention studies have included family meal components (22, 23). The Cooperative Extension program at Cornell University developed a program for parents to help encourage their children to be more active and eat more healthfully. The program by the Cornell Cooperative Extension entitled “Healthy Children, Healthy Families” included an 8 class series, with a full class dedicated to having healthy family mealtimes targeting low-income parents of children aged 3-11 years. A team of researchers and practitioners tested the program at eight Cornell Cooperative Extension sites throughout New York State (22). Results of the program showed most parents reporting eating together with children at baseline, leaving little room for improvement, however 20% of participants improved the frequency of eating together with their children (22). The second intervention study that focused on the family meal was the “Promoting Family Meals in WIC” program. In this study, a module was developed to be used at local WIC sites in Washington State. After the first six months of use, there was a statistically significant increase in family meal participation in intervention sites when compared to control sites (23).



Nutrition education interventions that target increasing family meal frequency have the potential of decreasing the prevalence of overweight and obesity in children (5, 19). However there has been limited research about how to increase family meals in low-income populations. The purpose of this study was to evaluate the effectiveness of a SNAP-Ed 4-week family meal focused nutrition education pilot curriculum to improve family meal frequency and quality among low-income parents in Rhode Island.

## METHODS

### *Design and Participants*

This study utilized a prospective, quasi-experimental design in a study conducted from April through May of 2011 at two Child Opportunity Zones (COZ) in RI. Low-income parents recruited at an intervention site in Rhode Island, participated in a SNAP-Ed sponsored 4-week family meal focused nutrition education pilot curriculum intended to improve family meal frequency and quality (dietary and environmental).

Concurrently, low-income parents recruited from another site in Rhode Island received a 4-week SNAP-Ed standard nutrition education program. The Newport COZ provided the experimental (family-meal focused) subjects (n=55). The Cranston COZ provided the control (standard SNAP-Ed workshop) subjects (n=178). However, data analysis was limited to parents who completed data collection on the initial and final week of curriculum in both the experimental (n=17) and control (n=18) groups for a total sample of N=35. Although multiple parents in a family attended workshops, only the primary meal preparing parent of a child in grades K through 3 was surveyed. Parents received weekly incentives and food demonstrations in both groups as part of standard SNAP-Ed protocol.

### *Intervention*

Both the family meal focused and standard SNAP-Ed curricula were 4-weeks in length. Workshops were approximately 1 hour in length. Each workshop consisted of an interactive lecture, discussion, food demonstration, incentive, and survey. The

control group received a standard 4-week SNAP-Ed nutrition education curriculum which included the following four workshops; MyPyramid, Fruits and Vegetables, Nutrition Facts Labels, and Think Your Drink. The family meal focused experimental intervention was adapted from the “Enriching Family Mealtimes Toolkit” created by the National Cattlemen’s Beef Association and USDA (24). The toolkit included step-by-step plans for family mealtime promotion in school and community settings, reproducible handouts featuring tips, recipes, shopping lists, and conversation starters for children of all ages, evidenced for the benefits of family mealtimes including children’s nutrition, health, academics, behavior, and general well-being, and background information on the health, weight, and nutrition issues facing American children. The materials found in the “Enriching Family Mealtimes Toolkit” were adapted for use in COZ’s by URI SNAP-Ed educators creating the family meal focused intervention composed of the following 4 workshops; The Importance of Family Mealtimes (which focused on the benefits of mealtimes), Family Mealtimes Made Easy (which addressed planning and scheduling of meals), Easy Food for Family Meals (focusing on diet quality and healthy foods), and Promoting the Family Meal (discussing barriers and setting goals).

### ***Measures***

Nutrition and family mealtime behaviors of the parents and children were assessed at week one and week four. Demographic information was collected at week one only. At week four, parental self-efficacy was assessed along with 4 program evaluation questions. Surveys were coded for anonymity; name and identifiable demographic

data were removed from surveys. Surveys were completed by parents at week one (pre workshop) and week four (post workshop) for both groups with the assistance of a SNAP-Ed nutrition educator. Surveys had been tested previously with low-income adults to determine comprehension and readability. Each survey page was coded with a 4 digit number to preserve anonymity. The first page with name and demographic information was detached and stored separately from survey data. Attendance was taken weekly by SNAP-Ed nutritionists and COZ coordinators. Demographic data and attendance data were entered into a spreadsheet by SNAP-Ed staff not involved with the study. These de-identified data were provided to study researchers.

### ***Primary Outcome***

The frequency of family meals was assessed using the validated instrument developed by the Promoting Family Meals Study (23). The specific item was, “On average, how many family meals do you take part in per week with this child or children? (Note: family meals include at least 1 parent present.)” Caregivers were provided 15 possible responses ranging from 0 to 14+ meals per week.

### ***Secondary Outcomes***

To assess the quality of the meal, the survey asked four questions taken from Washington State WIC Promoting Family Meals module survey (23). The four questions included “Do you usually watch TV during meals?” “Do you enjoy eating meals with your children?” “Do you sit with your children while they eat?” and “Do you plan ahead for family meals?” Subjects could answer “always”, “usually”, “sometimes”, “not usually”, or “never”. Responses were assigned to a Likert scale

scoring 1 through 5 with increasing values equaling a more desirable behavior. These items were taken from a larger survey, which used cognitive interview techniques for validation and were found to be appropriate in low-income populations (25).

### ***Tertiary Outcomes***

Nutritional quality of the diet of the child was assessed through surveying the parents. The survey measured fruit, vegetable, dairy, whole grain, and soft drink consumption using items taken from the NHANES Food Frequency Questionnaire (FFQ) which measured usual food intake (26). Fruit and vegetable intake was measured with the following questions, “How many cups of fruit does your child usually eat per day? And how many cups of vegetables does your child usually eat per day?” Response options included 0, 1, 2, 3, 4, or 5+. Totals were summed to obtain cups of fruits and vegetables per day (5+ was scored as 5cups). Soft drink consumption was measured by the following item, “In the past month how often does your child drink beverages such as soda, diet soda, energy drinks, sports drinks, and fortified juice drinks such as Hi-C, Kool-Aid, Vitamin Water, and Gatorade? (NOT including 100% juice)?” Response options included “never”, “2 or less times per week”, “3 or 4 times per week”, or “5 or more times per week”. Weekly intakes were estimated and reported categorically. Dairy consumption was measured by the following items, “How many cups of low-fat dairy food does your child usually eat per day?” (low-fat dairy foods include low-fat milk, cheese, yogurt, and milk-based deserts such as pudding). Response options included 0, 1, 2, 3, 4, or 5+cups per day (portion size charts and examples were provided to parents to improve accuracy). Whole grain consumption of

the child was measured by the following question, “How many ounces of whole grain food does your child usually eat per day?” A chart was attached to assist with accuracy of portion sizes as well as accuracy of reporting whole versus refined grain foods. Parents could answer 0, 1, 2, 3, 4, or 5+ ounces per day.

### ***Self Efficacy and Program Evaluation***

Self Efficacy and program evaluation questions were surveyed at week 4 only. Parent self-efficacy for increasing family meal frequency was measured by the question “How confident are you that you will eat 6 or more meals per week with your children?” with a 5 point anchored response scale, responses included; “not at all confident”, “not very confident”, “somewhat confident”, “very confident”, and “extremely confident”. Program evaluation questions were assessed at week 4 only and parents were asked 4 questions; “How much did this program help you improve your child(ren’s) diet?” “How much did this program help you increase the number of meals you participated in with your child(ren)?” “How much did this program help improve the environmental quality of your family meals?” and “How likely would you be to recommend this program to other parents?” Parents answered “very helpful” “somewhat helpful”, “neither helpful nor unhelpful”, or “not helpful at all”. For the question “How likely would you recommend this program to other parents?” participants answered “very likely”, “somewhat likely”, “not likely”, or “very unlikely”.

Attendance of each participant was measured for all subjects. Parents who attended at least week-1 and week-4 for post-survey and completed surveys at these time points were included.

### *Analyses*

All analyses were performed using SPSS (Version 20.0.0, IBM, Inc.). Distributions of baseline characteristics and demographics were described using frequencies or means +/- SD. Within group change for continuous variables was assessed using paired t-tests and for categorical data using chi-squared tests. Continuous variables were normally distributed. The primary analysis was a repeated measures Analysis of Variance (ANOVA) which assessed time by group interaction for the primary outcome of family meal frequency, similar analyses were conducted for the secondary outcome of family meal environment quality (four item survey measuring television viewing during meals, meal enjoyment, sitting with children during meals, and planning ahead for meals), and the following tertiary outcomes; whole grain intake, fruit and vegetable intake, and low fat dairy intake. Sugar-sweetened beverage intake was compared between groups using a chi-squared analysis. Self efficacy for increasing family meal frequency was measured at post-survey and was compared between groups using an independent t-test. The four remaining program evaluation questions were compared using a chi-squared analysis.

## RESULTS

A total of 35 subjects completed the pre and post-survey evaluations. Table 1 shows baseline characteristics and demographics. Of these 35 total subjects, 18 received the family meal focused intervention, and 17 received the standard SNAP-Ed nutrition education curriculum. Table 1 shows parent/caregiver demographics as well as the demographics of the elementary aged child. The vast majority of adult participants were female (97%). There were no differences between groups, but children were predominately male (66%). The majority (54% adults, 57% children) identified themselves as white with 48-51% identifying themselves as Latino/Hispanic. No subject in the experimental group reported having attended a SNAP-Ed program in the past but 6% of participants in the control group reported attendance at a previous SNAP-Ed program. Approximately 70% of all adult participants were receiving SNAP benefits.

Table 2 shows a pre and post comparison of family meal frequency and environment quality. There was no difference in family meal frequency between or within groups and no difference between groups for environment quality. Both the experimental and control groups watched significantly less TV during meals ( $p < 0.05$ ), as well as planned ahead more often for meals comparing the post to pre-survey (experimental:  $p < 0.05$ , control:  $p < 0.001$ ). The control group also reported enjoying meals more frequently on post-survey compared to the pre-survey ( $t = 2.1$ ,  $p = 0.049$ ) but there was no difference within the experimental group.



Table 3 displays the pre and post-intervention comparison of continuous dietary variables. There was no differences between groups but the experimental group increased intake of whole grains ( $p<0.05$ ) and cups of fruit per day ( $p<0.05$ ). There was no change in the control group. Table 4 shows a pre and post chi-squared analysis of sweetened beverage intake. Frequency of sugar-sweetened beverage consumption was not different between groups at pre or post assessment.

Table 5 displays results from the post-survey questions regarding program evaluation and the self-efficacy for increasing family meal frequency of parents. There was no difference found between groups. On average, parents in both groups reported they were very confident that they could increase the frequency of family meals. Parents in the experimental group found the program more helpful in increasing their meal frequency ( $p<0.05$ ) and more helpful at increasing their meal environment quality than in the control group ( $p<0.01$ ). Overall, 69% of participants found their respective workshop to be at least somewhat helpful to very helpful in improving their child's diet and 97% of participants were very likely to recommend the program to others. Attendance was good, mean classes attended were 3.7 +/- 0.47 in the experimental group and 3.8 +/-0.55 in the control group.

## DISCUSSION

The overall goal of this study was to determine the effectiveness of a pilot family meal focused nutrition education intervention that was implemented by SNAP-Ed in the state of Rhode Island. There was no change in meal frequency. Both groups met or exceeded the target goal of 6 meals per week on both pre- and post-intervention. Both groups reported increased planning ahead and reduced TV during meals, with no difference between groups. In addition the control group reported increased enjoyment of meals, but there was no change in the experimental group. The experimental group reported increased fruit and whole grain intake while there was no change in the control. Although there was no change in frequency, the experimental group reported the program was more helpful to increase their family meal frequency and improve their meal quality than the control group. These results indicate the program was not effective in improving frequency or quality of family meals, but resulted in positive dietary outcomes and was perceived as helpful.

Although based on the Promoting Family Meals instrument (23), the current study organized frequency responses of family meals into two separate columns with 5 or fewer meals grouped on the left side and 6 or more meals grouped on the right. It is possible that parents perceived the responses on the right side of the tool to be more desirable and thus selected 6 or more meals regardless of their actual meal frequency. It is also possible that parents may not have answered honestly due to social desirability (27). The frequency of family meals in this study (6.8 -7.6 times per week) is slightly higher than found in the Promoting Family Mealtimes program in

WIC, in which low income families reported eating together an average of 5-6 times per week (23). In contrast to the current study, the WIC study found a significant increase in family meal frequency in intervention sites between baseline (5.8 +/- 1.81 meals per week) and at 6 months (5.94 +/- 1.68 meals per week) ( $p < 0.001$ ) (23).

Another explanation for the lack of increase in family meal frequency could be related to consumer understanding of what constitutes a family meal. The definition of a “family meal” most commonly used in research is “those occasions when food is eaten simultaneously in the same location by more than one family member” (19). Because this study targeted the behavior change of the child, family meal frequency was assessed using the Washington State WIC definition by asking, “On average, how many family meals do you take part in per week with this child or children? Note: family meals include at least 1 parent present”. Despite the survey tool explicitly defining what is considered to be a “family meal”, it is a possibility that each parent conceptualized a definition of a “family meal” differently from the above definition. Martin-Biggers and colleagues conducted qualitative interviews with 25 geographically diverse parents who had at least one child aged 2-5 years old to investigate parents’ family meal perceptions and barriers (29). Berge and colleagues conducted interviews of 59 racially and socioeconomically diverse parents in order to identify single- and dual-headed household parents’ perspectives regarding family meals in research, barriers to family meals, and suggestions for helping families have more frequent family meals (30). However, neither study effectively addressed

parental conceptions of the family mealtime experience. Further qualitative research is needed to explore parental conceptions of family meals (19).

Other researchers have found that perceived lack of time was the most common barrier to eating frequent family meals (19, 28). The intervention included a strong meal planning and preparation component in order to address this barrier. Time and planning were also addressed in the Promoting Family Meals program of the Washington State WIC (23). The WIC study found that 84% of all participants reported planning ahead for meals, with no significant difference between or within groups, at baseline or post-survey (23). This study found that both groups significantly improved how often parents planned family meals on post-survey when compared to pre-survey. The control group also included a strong food and nutrition component thus the lack of difference between groups was expected. Unexpectedly, the control group was found to enjoy meals more often on post-survey. This may be related to increased meal planning, but it is also possible this was due to chance or measurement error.

Television viewing during meals was included in the intervention because it reduces the benefits of eating family meals (16). Families in both groups reported they watched less television during meals following the intervention. Although reducing TV was targeted in the intervention and not included in the control, both groups improved on post-survey. This is another unexpected finding.

There were significant improvements in children's dietary habits in the experimental group. Children increased the amounts of cups of fruit as well as the

amount of whole grains they consumed. There were no changes in the control group. This was unexpected because the control intervention focused on healthy foods, addressing fruits and whole grains specifically. In contrast, the experimental group received more education on meal planning, food shopping, and food preparation, than the control group. This could be the reason the experimental group saw an improvement in dietary intakes while the control group did not. According to Isobel Contento's Integrative Framework for Translating Theory into Effective Nutrition Education Practice, dietary change can be thought of as occurring in four phases: considering action, deciding on action, initiating action, and maintaining action proposing that nutrition education intervention objectives are different for each phases of change. Parents could have been in the maintaining-action-phase would have required an intervention to strengthen self-regulating skills. Although the current study attempted to assess stage of change, a data coding error resulted in an inability to assess stage. By assessing parents' readiness to change according to this framework, future interventions can be tailored appropriately and may result in more successful behavior change (31). Although the WIC family meal promotion program tailored intervention materials to stage of change, the program did not measure dietary intakes, the Cornell EFNEP intervention which incorporated parenting skills in nutrition education programs saw improvements in fruit, vegetable, and low-fat dairy intake (22).

The materials used in this study were piloted and tested in similar client populations for readability and comprehension as with all SNAP-Ed survey tools.

SNAP-Ed programs have been effective in improving nutritional outcomes in low-income populations (32). The lack of increase in family meal frequency in both groups could be related to the time of the intervention (from April to May). In workshops, parents reported that extra-curricular activities of the child were beginning to increase and this increased activity frequently caused them to eat away from home at more scattered times. This revisits the discussion point of re-conceptualizing the family meal. It is possible that parents viewed this time as busier, and they may not have defined non-traditional mealtimes qualifying as a meal (eating with children out of the home or on the road). Although the intervention emphasized that families can find non-traditional times to eat together, perhaps parents continued to associate the desired behavior of eating together as a family as a traditional mealtime (i.e. sitting down at a table with all members of a family eating a homemade meal). The health and nutrition benefits seen in children who take part in traditional versus nontraditional mealtimes is not well documented. It is conceivable that the benefits seen in children who eat with their parents could be attributed to the act of the parent and child eating together in any setting. There are unanswered questions; is there a value in a parent sitting with a child for 5 minutes in the morning and eating together and does the length of the meal provide different outcomes? Eating breakfast together as a family has benefits (8, 10), but are there different benefits to eating breakfast as opposed to lunch or dinner as a family? It is possible that there are benefits from family meals of all different definitions (19). It is known that positive effects of family dinner are undone by television viewing (16), thus a proposed definition of a family meal should include abstaining from watching television during meals.

Future research is needed to develop consistent, validated methods of measuring family meals that relate the behavior of eating together as a family to dietary or health outcomes (19). Despite the fact that the eating 6 family meals has been proposed as a target (21), there is a need for dose-response studies to establish a more concrete recommendation. Instead of using a frequency of meals per week target, using a “more matters” recommendation may be more beneficial, similar to that used in the US Dietary Guidelines for fruit and vegetable intake (in 2010 “more matters” vs. in 2005 “5-A-Day”) (33). Finally, there is a need for nutrition education research to develop effective interventions which tailor objectives based on a populations readiness to change, that affect frequency, quality of meals, and outcomes.

A major limitation in this study was the small sample size. In addition, the four-week intervention may have been too short to see meaningful behavior change, and because surveying was done on the 4<sup>th</sup> and final week of intervention, participants actually reported on the effects of 3 weeks of intervention. The instrument used to measure family meal frequency was also a limitation in this study.

The major strength of this study was that validated survey items were used (23, 26). Attendance of participants was good, with the vast majority of subjects attending all classes. All subjects were low-income, mostly receiving SNAP benefits.

## IMPLICATIONS FOR RESEARCH AND PRACTICE

Greater family meal frequency is associated with improved nutrition and health outcomes. However, additional interventions promoting family meals including nutrient dense foods in low-income populations are needed.

Nutrition education interventions should assess readiness to change and tailor objectives appropriately by using an integrative framework that links mediators of change from theory, phases of change, and nutrition education objectives for intervention.

Family meal promotion materials which address barriers can be a useful addition to existing nutrition education programs. Future research is needed to conduct, in-depth observational studies of family behaviors to identify additional barriers besides lack of time and scheduling constraints. It is possible that re-conceptualizing the family meal may be effective in reducing barriers.



<b>Table 1. Baseline Demographic Characteristics by Intervention Group</b>					
<b>Variable</b>	<b>Experimental (n=17)</b>	<b>Control (n=18)</b>	<b>Total (n=25)</b>	<b>Chi-Squared</b>	<b>Significance (p)</b>
Adult Gender	100% female	94.4% female	97.1% female	1.358	0.244
Child Gender	29.4% female	38.9% female	34.3% female	0.55	0.815
Adult Race	29.4% African-American, 41.2% white, 29.4%(n/a)	11.1% African-American 66.7% white, 16.7% (n/a), 5.6% other	20% African-American, 54.3% white, 2.9% other, 22.9% (n/a)	4.523	0.21
Child Race	5.9% Asian, 41.2% white, 29.4% African American, 23.5%(n/a)	11.1% African-American, 72.2% white, 16.7%(n/a)	57.1% white, 20% African American, 2.9%asian, 20%(n/a)	4.657	0.199
Adult-Attended SNAP	0% Yes	5.6% yes	2.9% Yes	1.358	0.244
Child-Attended SNAP	94.1% Yes	94.4% Yes	94.3% Yes	2.774	0.25
Adult Ethnicity	52.9% hispanic/latino	44.4% hispanic/latino	48.6% hispanic/latino	0.027	0.869
Child Ethnicity	58.8% hispanic/latino	44.4% hispanic/latino	51.4% hispanic/latino	0.262	0.608
Adults receiving SNAP benefits	70.6% Yes	66.7% Yes	68.6% Yes	0.062	0.803

<b>Table 2. Pre and Post Comparison of Meal Frequency and Environment Quality by Intervention Group</b>				
<b>Variable</b>	<b>Pre (mean +/- SD)</b>	<b>Post (mean +/- SD)</b>	<b>Within (t)</b>	<b>Between (F)</b>
<b># of Meals per week</b>				
<i>Experimental (n=17)</i>	6.82 +/- 2.32	6.65 +/- 2.5	0.61 (NS)	1.63 (NS)
<i>Control (n=18)</i>	7.61 +/- 3.7	8.11 +/- 3.82	1.1 (NS)	
<b>Meal Enjoyment<sup>1</sup></b>				
<i>Experimental (n=17)</i>	4.12 +/- 0.78	4.24 +/- 0.44	0.808 (NS)	1.323 (NS)
<i>Control (n=18)</i>	4.33 +/- 0.69	4.72 +/- 0.46	2.122 (p=0.049)**	
<b>Sit with Children<sup>1</sup></b>				
<i>Experimental (n=17)</i>	4.12 +/- 0.49	4.12 +/- 0.6	0.000 (NS)	2.004 (NS)
<i>Control (n=18)</i>	4.17 +/- 0.86	4.39 +/- 0.7	1.719 (NS)	
<b>Plan Ahead<sup>1</sup></b>				
<i>Experimental (n=17)</i>	3.35 +/- 0.79	3.71 +/- 0.79	2.4 (p=0.029)**	2.046 (NS)
<i>Control (n=18)</i>	3.33 +/- 0.69	4.0 +/- 0.49	4.123 (p=0.001)***	
<b>TV During Meals<sup>2</sup></b>				
<i>Experimental (n=17)</i>	3.12 +/- 0.857	3.47 +/- 0.717	-2.4 (p=0.029)**	1.431 (NS)
<i>Control (n=18)</i>	3.33 +/- 1.029	4.06 +/- 0.802	-2.718 (p=0.015)**	
<sup>1</sup> Scores are based on the following responses 1= never, 2= not usually, 3=sometimes, 4=usually, 5=always <sup>2</sup> scores reversed to 1=always, 2=usually, 3=sometimes, 4= not usually, 5=never **p<.05 ***p<.001 NS= Not statistically significant				

<b>Table 3. Pre and Post Comparison of Child Dietary Intakes by Intervention Group</b>				
<b><u>Variable</u></b>	<b>Pre (mean +/- SD)<sup>1</sup></b>	<b>Post (mean +/- SD)<sup>1</sup></b>	<b>Within (t)</b>	<b>Between (F)</b>
<b>Oz of Whole Grains per day</b>				
<i>Experimental (n=17)</i>	1.38 +/- 0.546	1.71 +/- 0.47	-2.28 (p=0.037)**	0.51 (NS)
<i>Control (n=18)</i>	1.39 +/- 0.676	1.78 +/- 0.81	-1.57 (NS)	
<b>Cups of Fruit per day</b>				
<i>Experimental (n=17)</i>	1.85 +/- 0.862	2.18 +/- 0.592	-2.28 (p=0.037)**	0.23 (NS)
<i>Control (n=18)</i>	1.75 +/- 0.772	1.97 +/- 0.652	-1.409 (NS)	
<b>Cups of Vegetables per day</b>				
<i>Experimental (n=17)</i>	1.12 +/- 0.376	1.47 +/- 0.514	-2.78 (NS)	0.002 (NS)
<i>Control (n=18)</i>	0.81 +/- 0.572	1.17 +/- 0.383	-2.6 (NS)	
<b>Cups of Dairy per day</b>				
<i>Experimental (n=17)</i>	1.59 +/- 1.162	1.82 +/- 0.828	-1.51 (NS)	0.43 (NS)
<i>Control (n=18)</i>	2.11 +/- 0.758	2.22 +/- 0.548	-1.0 (NS)	
**p<.05 NS= Not statistically significant				

<b>Table 4. Pre and Post Comparison of Sweetened Beverage Intake by Intervention Group</b>				
	<i>Never</i>	<i>2 or less times per week</i>	<i>3 or 4 times per week</i>	<i>5 or more times per week</i>
<b><i>Pre</i></b>				
Experimental (n=17)	0	5 (29.4%)	8 (47.1%)	4 (23.5%)
Control (n=18)	1 (5.6%)	6 (33.3%)	7 (38.9%)	4 (22.2%)
Total (N=35)	1 (2.9%)	11 (31.4%)	15 (42.9%)	8 (22.9%)
Chi-Squared	1.515 (NS)			
<b><i>Post</i></b>				
Experimental (n=17)	3 (17.6%)	10 (58.8%)	4 (23.5%)	0
Control (n=18)	2 (11.1%)	7 (38.9%)	9 (50%)	0
Total (N=35)	5 (14.3%)	17 (48.6%)	13 (37.1%)	0
Chi Squared	2.679 (NS)			
NS = Not statistically significant				

<b>Table 5. Post-Survey Program Evaluation Questions and Self Efficacy</b>				
<b>Variable</b>	<b>(mean +/- SD)</b>			<b>(t)</b>
<b><sup>1</sup>Self Efficacy</b>				
<i>Experimental (n=17)</i>	4.12 +/- 0.857			-1.743 (p=0.91)
<i>Control (n=18)</i>	4.56 +/- 0.616			
<b>Post Survey Program Evaluation Questions Frequencies by Intervention Group</b>				
<b>Variable</b>	<b>Very likely/helpful</b>	<b>Somewhat likely/helpful</b>	<b>Not likely/neither helpful nor unhelpful</b>	<b>CHI-Squared (significance)</b>
<b>Improving Childs Diet</b>				
<i>Experimental (n=17)</i>	13 (76%)	4 (24%)	0	1.927 (NS)
<i>Control (n=18)</i>	11 (61%)	6 (33.3%)	1 (5.5%)	
<i>Total (n=35)</i>	24 (68.5%)	10 (28.5%)	1 (3%)	
<b>Helpful to Increase Meals</b>				
<i>Experimental (n=17)</i>	15 (88%)	2 (12%)	0	8.696 (P<.05)**
<i>Control (n=18)</i>	4 (22%)	6 (33.3%)	8 (44.4%)	
<i>Total (n=35)</i>	19 (54%)	8 (23%)	8(23%)	
<b>Helpful to Improve Environment Quality</b>				
<i>Experimental (n=17)</i>	12 (71%)	5 (29%)	0	12.31 (P=0.006)**
<i>Control (n=18)</i>	1 (6%)	15 (83%)	2 (11%)	
<i>Total (n=35)</i>	13 (37%)	20 (57%)	2 (6%)	
<b>Likely to Recommend Program</b>				
<i>Experimental (n=17)</i>	16 (94%)	1 (6%)	0	1.475 (NS)
<i>Control (n=18)</i>	18 (100%)	0	0	
<i>Total (n=35)</i>	34 (97%)	1 (3%)	0	
<p><sup>1</sup> Parent self efficacy for increasing family meal frequency with the following responses: 1=not at all confident, 2=not very confident, 3=somewhat confident, 4= very confident, and 5=extremely confident</p> <p>**p&lt;.05</p> <p>NS = Not statistically significant</p>				

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## APPENDICES

### A. LITERATURE REVIEW

Overweight and obesity have been on the rise in the U.S. population over the last three decades. The National Health and Nutrition Examination Survey (NHANES) tracks trends in the prevalence of obesity in the United States. In 2012, NHANES found that approximately 34.9% of U.S. adults were obese, an increase from 15% in 1976 (CDC, 2012). Similar trends in the prevalence of obesity in children have been observed by NHANES. Obesity rates increased from 5.0% to 8.5% between 1976-1980 and 2010-2012 in young children and from 6.5% to 17.7% among children between the ages of 6-11 during the same period. Approximately one in five children in the US starting kindergarten is overweight and eats fruits and vegetables fewer than the recommended five or more times per day (CDC, 2013). More than one quarter of children watch three or more hours of television per day despite the recommendations for two hours or less per day (RIDOH, 2012). Poor diet quality and the increased sedentary lifestyle of children in the US is likely to be contributing to the increases in overweight and obesity, and improving these factors has been shown to positively impact it's prevalence.

Obesity is linked to many preventable chronic diseases including hypertension, diabetes, and heart disease. These chronic diseases combine to account for 75% of all medical expenses (CDC, 2013). With the rise in childhood overweight and obesity, obesity prevention interventions should be targeted at young populations.

Healthy eating and activity behaviors created during childhood tend to continue on through adulthood. However, targeting obesity can be quite challenging. The obesity phenomenon is in fact, highly complex with many interconnecting factors, contributors and elements. One of these elements is the environment. The Social Cognitive Theory hypothesizes that “an individual’s characteristics, behaviors, and environment within which the behaviors occur simultaneously and reciprocally affect each other” (McAlester, Perry, & Parcel, 2008). Successful behavior change is facilitated by an environment which supports the desired behavior.

Another contributing element to the obesity epidemic is lack of basic healthy eating knowledge. The United States Dietary Guidelines encourage Americans to eat a healthy diet; one that focuses on food and beverages that help maintain a healthy weight, promote health, and prevent disease. The 2010 US Dietary Guidelines emphasize three major goals: balance calories with physical activity to maintain weight, consume more fruits, vegetables, whole grains, fat-free and low-fat dairy foods, and seafood, and consume fewer foods with added saturated fat, trans-fat, cholesterol, salt, refined grains and sugar (USDA & HHS, 2010). Most Americans do not meet these recommendations (CDC, 2013). Typically, Americans consume about half of the recommended amounts of fruits and vegetables. Intake of low-fat and fat-free milk and milk products, including fortified soy beverages, is less than recommended amounts for most children and adolescents ages 2 to 18 years (Kit, Carroll, & Ogden, 2013). Recommended amounts are 3 cups per day of fat-free or low-fat milk and milk products for children and adolescents ages 9 to 18 years, 2 and a

half cups per day for children ages 4 to 8 years, and 2 cups for children ages 2 to 3 years (USDA, 2010).

Added sugars are of particular concern when targeting obesity prevention. Although sugars can be found naturally in fruits, vegetables and milk products, the majority of sugars in the American diet are sugars that are added to foods during processing, food preparation, and at the table. Added sugars contribute an average of 16 percent of the total calories in the American diet. The major source of calories of total added sugars come from soda, energy drinks, sports drinks, and sugar-sweetened fruit drinks (USDA, 2010). Reducing the consumption of these sources of added sugars will lower the calorie content without compromising the overall nutrient adequacy in the American diet.

The recommended amount of refined grains is no more than 3 ounces per day (USDA, 2010). Refined grains should be replaced with whole grains, and half of all grains consumed should be consumed as whole grains. Whole grains include the entire grain seed (bran, germ, and endosperm). Refining grains removes nutrient dense parts of the seed. Whole grains are a source of nutrients such as iron, magnesium, selenium, B vitamins, and dietary fiber. Moderate evidence exists that whole grain intake may reduce the risk of cardiovascular disease (Harris & Kris-Etherton, 2010).

In order to significantly improve the weight and healthy eating behaviors of Americans, there needs to be more effective health-education elements. Basic nutrition education is a necessary part of any obesity prevention strategy, the US Dietary Guidelines 2010 provides the basis for many educational programs like the Women

Infants and Children (WIC) program, the Expanded Food and Nutrition Education Program (EFNEP), and Supplemental Nutrition Assistance Program-Education (SNAP-Ed). Educational programs like these are successful in educating the population about quantitative recommendations and goals (Gabor, 2012).

An important, yet understudied environment that profoundly affects health and body weight is the home, especially for children (French, Story, & Jeffrey, 2001; Hill, Goldberg, Russell, & Peters, 1998; Speakman, 2004; Monasta et al., 2010). The home environment can include things like access to food as part of its physical environment, but also things like screen-time increasing physical inactivity. Mealtimes are an important behavior within the home environment which deserves particular attention. Family mealtimes are now being recognized as an important component of health education and promotion for children and adults (Fruh, Fulkerson, Mulekar, Kendrick, & Clanton, 2011, Fiese & Schwartz., 2008). The American Academy of Pediatrics recommends that families regularly eat meals together as part of childhood obesity prevention (AAP, 2013).

Research has found relationships between the frequency of family meals and the choices that young people make regarding healthy food selections, positive family values, and avoidance of high-risk behaviors (Gillman et al., 2000 & Neumark-Sztainer, Wall, Story, & Fulkerson, 2004). Family meal frequency has a significant impact on the healthfulness of family food choices. Middle-school students with frequent family meals consumed fewer soft drinks, were less concerned with body weight, and had higher self-efficacy for healthy eating than middle-school children

with infrequent family meals (Cullen, 2000). Children and adolescents with more frequent family meals were more likely to eat breakfast than those with less frequent family meals and breakfast consumption is associated with a reduced prevalence of obesity in children (Cullen, 2000). Nutritional patterns in children are predictive patterns in adolescence (Dietz, 2001). Teens who have frequent family meals have higher consumption of fruits, vegetables, grains, calcium-rich foods, and less soft drink consumption than teens with infrequent family meals (Niclas et al., 2003; Neumark-Sztanier, 2010). A cross-sectional analysis of over 16,000 children ages 9-14 found that boys and girls who ate dinner with their families every night had almost a full serving more of fruits and vegetables per day, consumed less fried food and soda, and used multivitamins more than children who reported having family dinner never or sometimes (Neumark-Sztainer, 2010). Frequency of family meals is also related to a decreased risk of obesity at certain ages. Adolescents who reported they rarely eat family dinners were found to be more likely to be overweight than adolescents who report that they eat family meals five to seven times per week (Neumark-Sztainer, 2010; Gillman et al., 2009). However, one study found that family meals eaten by students during high school were not associated with overweight or obesity in adulthood (Gillman et al., 2009). This suggests children who initiate family meals later in life may not receive the same benefits as children who start family meals at younger ages. There is a negative correlation between frequency of family meals and frequency of high-risk behaviors such as substance abuse, sexual activity, depression, suicide, antisocial behaviors, violence, school problems, binge eating, purging, and excessive weight loss (Fulkerson, Kubik, Story, Lytle, & Arcan, 2009; Neumark-

Sztanier, 2004; Neumark-Sztanier, 2008). However, this may be associated with socioeconomic status (SES). Family dinner was positively associated with SES (Neumark-Stainer, 2004). This suggests that interventions to increase family meal frequency should be targeted towards children of low-income families.

Besides SES, television viewing during meals is also associated with decreased nutritional quality of meals. Family meals were associated with higher intakes of fruits, vegetables, and milk among families who did not watch television during meals. Fewer fruits and vegetables were consumed among families watching television during meals (Fitzpatrick, Edmunds, & Dennison, 2007). Television watching during mealtimes was associated with a higher fat intake and fewer servings of fruits and vegetables among 277 adults with children (Boutell, Birnbaum, Lytle, Murray, & Story, 2003).

One study observed perceived barriers to families eating together. The study found that work schedules, sports involvement, homework, hanging out with friends and watching television all interfered with adolescent participation in family meals (Neumark-Sztainer, 2000). The perception of barriers is something also studied in programs designed to increase physical activity. A 2007 study found that the act of perceiving similar barriers (i.e. "lack of time) to exercising resulted in less physical activity. The same study also found that the greater the number of barriers perceived were inversely correlated with time spent being physically active (Reichart, 2007).

One major barrier to studying family meals is its definition. Family meals have taken many forms. Definitions vary with regard to the number of people who must be present to constitute a family meal ranging from all or most of family members

(Bauer, 2011; Berge, 2010; Blake, 2011; Fulkerson, 2006, 2008a, 2008b, 2010a; Lytle, 2011, Larson, 2007), to at least one parent and one child (Hannon, 2003; Mestdag, 2005; Videon, 2003; Woodruff, 2009). Other studies simply ask about the “family” itself and do not provide specific definitions (Ackard, 2001; Andaya, 2011, Boutelle, 2003; Kiefer, 2004; Koszewski, 2011; Mamma, 2005, Miller, 2012, Sen, 2006; Sweetman, 2011). Definitions also vary with regard to the meal type, with some restricting the definition to only the dinner meals (Fulkerson, 2006; Fulkerson, 2010a; Videon, 2003; Woodruff, 2009; Boutelle, 2003; Fitzpatrick, 2007; Kiefer, 2004; Anderson, 2010), and others recognizing any eating occasion as potentially a family meal (Bauer, 2011, Berge, 2010; Eisenberg, 2008; Utter, 2013; Neumark-Sztainer, 2003, Neumark-Sztainer, 2004; Neumark-Sztainer, 2010; Welsh, 2011; Chan, 2011; Hannon, 2003; Mestdag, 2005a; Sweetman, 2011). Inconsistent and complex definitions limit the comparison of results across studies (Martin-Biggers et al., 2014). Meal consumption is typically assessed with self-report surveys, and there are many differences in question formatting and wording due to the wide variety of family and family meal definitions researches have used. In current research, family meals are most often defined as those occasions when food is eaten simultaneously in the same location by more than one family member.

Some hypothesize that there has been a decline in family meal frequency (Kiefer, 2004; Mestdag, 2005a; Mestdag 2005b; Neumark-Sztainer, 2013). Parents commonly cite their own childhood as a time where families ate together more often (Mestdag, 2005a). A detailed search of family meal frequency research found limited evidenced to support this. Present evidence includes a longitudinal survey of greater

than 4000 Belgian families from 1966 to 1999 that reported that the number of family meals declined from 1.56 to 0.88 per day (Mestag, 2005b). Another study found that the frequency of family meals in a single age group remained the same from 1999 to 2012, yet showed declines in subgroups of girls, middle school students, and children from low socioeconomic backgrounds (Neumark-Stainer, 2013). A Gallup telephone survey of American adults found that from 1997 to 2003, the number of adults with children aged <18years old who had family dinner 7 nights per week fell from 37% to 28% (Kiefer, 2004). Still, parents and researchers alike hypothesize that the family meal is on the decline, despite difficulty measurement.

In light of the previous research and nutritional and behavioral benefits of families eating together, the American Medical Association's (AMA) expert panel on childhood obesity recently recommended that healthcare practitioners "encourage family meals on most, if not all, days of the week" (Goutham, 2008), with support from the American Academy of Pediatrics which also recommends families regularly eat meals together as part of childhood obesity prevention (AAP, 2013). Nutrition education interventions that target increasing family meal frequency have the potential of decreasing the prevalence of overweight and obesity in children.

Most research regarding the study of family mealtimes involves the cross-sectional studies of associations between frequency of family meals and various health behaviors and dietary intakes. There is limited research on interventions aimed at increasing the frequency of, and improving the quality of family mealtimes. The largest study was conducted by the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program in Washington State (Johnson, 2010).



Washington State WIC developed the “Promoting Family Meals” module to be used at local WIC agencies to promote family meals. The module included background information on the benefits of family meals, tools for training the WIC staff, outlines for group sessions, handouts tailored to each client’s stage of change, and materials for children (bookmarks, coloring books, posters etc). A pilot study was conducted to test this module at WIC centers throughout the state of Washington (Johnson, 2010). The key messages for the module were: “eating together strengthens the family”, “eating together is a part of parenting”, “eating together helps children eat better”, “children can help with family meals”, “there are many benefits to eating together as a family”, and “it is possible to work through barriers such as demanding work schedules to eat together some time during the week, and try eating together at unconventional times and places”. An 11-item survey was developed as the main outcome measure of this study. It asked, “Over the past 7 days, on how many days did you eat a meal with other members of your household?” in order to assess family meal frequency, family meals were defined as those occasions when food is eaten simultaneously in the same location by more than one family member. To assess the quality of the meal, the survey asked 4 questions: “Do you usually watch TV during meals?” “Do you enjoy eating meals with your children?” “Do you sit with your children while they eat?” and “Do you plan ahead for family meals?” Subjects could answer “always,” “usually,” “not usually,” or “never.” The study surveyed 8,618 WIC clients at baseline and 6 months after program intervention. It found that the Promoting Family Meals Module increased the number of days families ate together by 2% in the intervention group and decreased by 4% in the control group which did not receive the module. The study

concluded that the Promoting Family Meals module can be applied to large-scale health promotion initiatives in Women Infants and Children (WIC) and other United States Department of Agriculture (USDA) programs. A limitation to this study is that all behaviors were self-reported and that some subjects reported eating together more often because they had learned that higher meal frequency was a desirable response (Johnson et al, 2006).

The Cornell University Cooperative Extension developed a program targeted towards parents intended to encourage their children to be more active and eat more healthfully. The program developed by the Cornell Cooperative Extension entitled “Healthy Children, Healthy Families” includes a 7 class series, with a full class dedicated to having healthy family mealtimes targeting low-income parents of children aged 3-11 years. The program was intended to help low-income parents prevent childhood obesity by not only providing health/nutrition education, but also to improve parenting techniques. The program includes having healthy family meals as a point of good parenting as well as an obesity prevention technique. A team of researchers and practitioners tested the program at eight cooperative extension sites throughout New York State. The curriculum was then revised to reflect feedback from educators and parents. Many other health education programs such as SNAP and WIC have used the Healthy Children, Healthy Families initiative as a starting point to develop new parent-focused childhood obesity prevention programs throughout the country. A team of researchers and practitioners tested the program at eight Cornell Cooperative Extension sites throughout New York State (Dickin, 2014). Results of the program showed most parents reporting eating together with children at baseline,

leaving little room for improvement, however 20% of participants improved the frequency of eating together with their children (Dickin, 2014). The main purpose of the study done by Dickin and colleagues was to determine the effectiveness of integrating parenting education with nutrition education on many different health behaviors such as fruit, vegetable, and fast food intake. Family meal frequency was not a primary outcome in this study (Dickin, 2014).

A study done by Texas A&M University surveyed 300 parents about parents' work, meal planning for and scheduling of meals, motivations for food purchases, importance of family meals, and children's frequency of eating dinner with their families. Children's meal frequency was measured by parent phone interview. The modal score for this variable was "frequently" on a scale that ran from "never" to "very frequently". The study found that Mothers' perception of time pressures on meal preparation had a negative, indirect effect on the frequency of children's participation in family dinners by reducing mothers' meal planning. This study examined why nutrition education interventions that promote family meals should target parents, but it did not look at a way to increase family meal frequency, only behaviors that would decrease the frequency in which children ate meals with family (McIntosh et al, 2010).

Greater family meal frequency is associated with improved nutrition and health outcomes. However, interventions promoting family meals including nutrient dense foods in low-income populations are needed. Health programs and interventions need

to encourage frequent family meals that include nutrient-dense foods in appropriate portions, and that are served in conflict-free and television-free environments.

Family meal promotion materials which address barriers can be a useful addition to existing nutrition education programs. Future research is needed to conduct, in-depth observational studies of family behaviors to identify additional barriers besides lack of time and scheduling constraints. It is possible that re-conceptualizing the family meal may be effective in reducing barriers.

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## B. MEAL FREQUENCY TOOL

**On average, how many family meals do you take part in per week with this child or children? (Note: Family meals include at least 1 parent present, Please circle one of the boxes below.)**

0	1	2			6	7	8	9	10
3	4	5				11	12	13	14+

How likely would it be for you to **increase** the number of family meals you have by **1 meal per week?** (Circle answer a, b, or c).

a). I do not intend to increase the number of family meals per week within the next 6 months.

b). I intend to increase the number of family meals per week within the next 30 days.

c). I intend to increase the number of family meals per week within the next 6 months.

How long have you been doing this behavior? (Circle answer a or b).

d). I already have 6 or more meals per week, but have been doing this for less than 6 months.

e). I already have 6 or more meals per week and have been for the past 6 months.

## C. FAMILY MEAL INTERVENTION LESSON PLAN OUTLINE

### Improving Family Meals SNAP-Ed Curriculum (IFM)



#### Lesson 1: Importance of Family Mealtimes

##### Objectives:

- Parents will be able to identify the nutritional and behavioral benefits of eating regular family meals.
- Parents will understand that the goal of the family meal is a positive environment from the child's perspective.

##### Materials:

- Presurvey
- "Five Key Reasons to Make Family Mealtimes a Priority" handout
- Incentives (SNAP-Ed shopping bags)
- Food demonstration

#### 1. Introduction

- There are many reasons why the time has come to focus attention on family meals. Are family meals important to you?
- Why are family meals important to you?
- Today we are going to discuss some other reasons why family meals are important for you and your children.

#### 2. Lesson

- The family meal is a relatively simple act that can have a profound impact on overall health and well-being.
- Let's review the many established benefits of having regular and positive family meals.
- ASK: What do you think is more important, eating regular and frequent meals, or having a more positive environment during meals that may occur less frequently?
  - The answer is BOTH. But according to experts, the issue isn't whether a family eats a specific meal every night. The key issues are the communication and intergenerational connections that are made around the table.
- ASK: What are some of the benefits you get from eating a meal together as a family? (discuss)
  - Family mealtimes help:
    - Family togetherness
    - Behavior issues

- School success
- Better nutrition
- Weight concerns
- Let's discuss each of these benefits individually.
- Family Togetherness
  - Positive mealtimes help bring a sense of unity to family life.
  - The table is a place where families can build a sense of identity and commitment to one another.
  - Children gain a sense of safety and security.
  - Family mealtime conversation has a big impact, even when kids don't seem to listen, and often is a good way to examine family values.
  - Adults act as role models for a child's manners and eating habits.
  - Discussion: Let's each think of a memory from one of their family meals, either today or growing up. Discuss similarities and differences between group members.
- Behavioral Issues
  - More family meals mean that children and teens are less likely to:
    - become depressed
    - use illegal drugs
    - abuse alcohol
    - smoke cigarettes
    - develop eating disorders
    - and get pregnant
  - Although no study has determined the exact number of family meals that are necessary for benefits, researchers generally agree that it takes more than 2 per week, and that 5 or more per week are recommended for children and adolescents.
- School Success
  - More family meals mean youth are more likely to:
    - learn new vocabulary
    - learn and practice language skills
    - do well in school and score well on achievement tests
    - report getting all A's and B's
  - One study at Harvard's Graduate school followed children over a 15 year period and found that conversations at the family table taught children more vocabulary than they learned from parents reading books to them.
- **\*\*Better Nutrition and Weight Concerns**
  - The family meal has been a target of prevention to combat the child obesity epidemic.
  - Young people who eat more often with their families have higher intakes of fruits, vegetables, grains, and dairy foods.



- As teens, more regular family meals mean fewer fried foods and soft drinks, with higher intakes of calcium, iron, vitamins A, B6, C, E and folate, as well as fiber.
- Developing smart eating habits at the family table also helps young people make healthier choices when their parents aren't around. Studies have shown that having family meals with your teenagers improves their chances of eating right into their 20's.
  - More family meals also mean that children and teens are:
    - More likely to have a healthy weight
    - Less likely to become overweight or stay overweight
    - Less likely to develop and eating disorder
  - Children who watch more television and had fewer meals with their families in kindergarten were more likely to become overweight and to remain overweight through the 3rd grade.
- Goals for a positive mealtime experience
  - Now we know why family meals are good for our children, so what are the basics of a positive mealtime experience?
    - To have nutrient-rich foods at meals
    - For the meal to be TV and phone-free
    - The meal should have minimal distractions
    - There should be a relaxed atmosphere
    - Conversation should be positive and child-focused
  - Important: Children do not need a perfect meal every night of the week.
  - As parents, you should not feel guilty when schedules seem too crazy for everyone to sit down together. Family meals only get better with practice.
- Cooking, eating, and talking together can bring out the best in families. Mealtimes are wonderful places to build strong relationships, a sense of pride and accomplishment, and memories for a lifetime.
- If time, return to earlier group discussion about personal memories of family mealtimes.
- Administer incentives (SNAP-Ed shopping bags) and Five Key Reasons to Make Family Mealtimes a Priority handout.
- Food demonstration (see attached recipes)

## Lesson 2: Family Mealtimes Made Easy

### Objectives:

- Families will be able to identify ways to enjoy more meals together.

### Materials:

- Handouts (conversation starters for different ages)
- Food demo
- Incentives (SNAP-Ed coupon books)

### Introduction

- In our fast paced lifestyles, family mealtimes can play a very special role. They provide a quiet place to enjoy others, without the pressure and stress of school and work.
- Creating a positive mealtime environment is easier than we think. This lesson will review the basics and share easy tips for helping your family enjoy eating and talking together.
- Ellyn Satter RD is one of the premier child feeding experts in the U.S. and she says, “If I had to settle for one thing to tell families about preventing child overweight, helping children to eat a variety of food, and raising them to have positive eating attitudes and behaviors, I would say, have meals.”
- In other words, she believes the family meal lays the nutritional foundation for children. When children have regular meals they are more likely to grow up with a healthy weight and healthy eating habits that can last a lifetime.

### Lesson

- Contrary to what parents might feel, surveys confirm that children and teens enjoy having family meals.
- To have regular family meals, eating together must be a priority. Even when schedules are overcrowded, when families make eating together a priority, finding the time becomes possible.
- There are 5 easy ways to make more family mealtimes a reality in your home:
  1. Add meals gradually
    - Experts suggest 5 or more family meals per week.
    - ASK: How many family meals do you usually have now?
      - If your family has gotten out of this habit, don't try to change everything all at once. Drastic changes in eating patterns are rarely, if ever successful.
      - Simply look at your weekly schedule and try to add just one family meal to your weekly schedule.
    - ASK: How could you easily add one more family meal per week?
      - Evenings can seem too hectic for a family dinner, try setting aside time for a weekend breakfast or lunch!

- Discussion: Can anyone share some ideas for getting families back into the habit of eating together? How can you make these ideas work in your home?
2. Plan tasty menus
    - The best meals are simple, delicious, and planned with other family members.
    - Get children involved in planning, shopping, preparing, cooking, and enjoying meals.
    - Try letting everyone choose a favorite menu. Even small children can pick a main dish like tacos or pasta, a veggie like cooked carrots or salad, and fruit for dessert sliced fresh apples or a fruit salad.
    - Some parents see cooking as a chore, but young children see the kitchen as an exciting place. For children, eating becomes special when “I got to pick it out” or “I made it myself”.
    - Cooking with children also helps children learn about:
      - Culture (different people/different foods)
      - Real life math (doubling or halving recipes)
      - Organization (setting the table)
      - Following directions (reading a recipe)
  3. Set an appealing table
    - Food is not the only important part of a mealtime. There are lots of easy ways to set the mood for a relaxed mealtime atmosphere.
    - ASK: What are some ways you can make the table more kid friendly and appealing?
      - Some simple ways are using colored napkins, bright tablecloths, kids’ artwork, flowers, or a candle.
      - Fancy linens are not necessary or practical; paper and plastic work just fine.
  4. Minimize distractions
    - QUALITY conversation happens when mealtimes are as calm as possible with minimal distractions. Technology is distracting, making it difficult to eat or talk to each other.
    - Make mealtime an electronic-free zone (except for emergencies).
    - Music in the background at a low volume can be a good idea, especially if you let each family member choose the music (also helps encourage discussion).
    - Discussion: Can you share some ideas for reducing the distractions during mealtimes? How can you make these ideas work in your home?
  5. Enjoy conversations
    - Conversation has endless benefits to families:

- Children learn new words.
  - Adults can share their values with new generations.
  - Family connectedness and trust building.
  - Choose topics that are positive and allow EVERYONE to talk (even toddlers are able to discuss topics like, “what is your favorite color”, and “what made you laugh today”).
  - Be patient with those who take longer to express themselves, but make sure to consciously seek out opinions of those who are usually quiet.
- **ACTIVITY:** Distribute some of the conversation starter cards and discuss how to use them in various situations.
  - Try to avoid stressful topics at mealtimes. Make a commitment to focus on positive topics before and during mealtimes to make mealtime a something to look forward to.
  - Administer all conversation starters for parents to take home and incentives (SNAP-Ed coupon books).
  - Food demonstration (see attached recipe schedule)

### Lesson 3: Easy Food for Family Mealtimes

#### Objectives:

- Families will be able to make family meals simple and nutrient-rich meals through the use and understanding of MyPyramid and the Dietary Guidelines.

#### Materials

- MyPyramid Board
- MyPyramid Handouts
- Incentives (SNAP-Ed recipe booklets)

#### Introduction

- Both American children and adults are missing some key nutrients that we need to look great, feel better, and be stronger.
- According to the USDA Dietary Guidelines, the nutrients Americans are falling short of are calcium, potassium, magnesium, and fiber, along with vitamins A, C, and E.
- Children and older adults may also be missing iron, folate, and vitamins B6 and D.
- This lesson will show you how to put these nutrients back into your family meals through the help of MyPyramid and the food groups.

#### Lesson

- Introduction to MyPyramid and Go, Slow, Whoa
  - There are 6 color bands, but only 5 food groups. Does anyone know the 5 food groups?
    - Grains, Vegetables, Fruit, Milk, Meat & Beans. The other band is fat/oils which we'll talk about later.
  - Does anyone notice that each band is a different width?
    - That is because we need different amounts from each food group
  - Review the 5 different food groups, colors, and amounts that should be aimed for daily
    - Orange = Grains: 6 oz/day (half your grains whole)
      - Largest group because we should be eating the most from this group.
      - We get most of our energy from these foods.
      - Includes foods like pasta, rice, breads, crackers, cereal...
    - Green= Vegetables: 2 ½ cups/day (vary your veggies)
      - Second largest group, means we should also be eating a lot of foods from this food group.

- Vegetables are good for you because they contain many vitamins and minerals that are important to the body and keeping it healthy.
- Includes foods like broccoli, corn, potatoes, spinach, lettuce, carrots...
- Red= Fruit: 2 cups/day (focus on fruits)
  - Another large food group on the pyramid. If you don't eat your vegetables then you should definitely be eating your fruit.
  - Fresh, frozen, canned, or dried, doesn't matter, fruit is fruit.
  - Includes foods like apples, berries, watermelon, oranges, grapes...
- Blue= Milk: 3 cups/day (get your dairy foods)
  - Important food group because all the foods in the food group contain calcium which is important for forming healthy strong bones and teeth and is important for muscle function in the body.
  - Includes foods like yogurt, milk, cheese, and even ice cream (but isn't the best source of calcium).
- Purple= Meats & Beans: 5-6 oz/day (go lean with protein)
  - Smallest food group on the pyramid but still important to a healthy diet.
  - Foods in this group are high in protein which we need to build our bodies and keep us strong. Protein makes up our muscles, hair, nails and skin.
  - Includes food like chicken, beef, fish, nuts, peanut butter, eggs and different kinds of dried beans.
- What about the yellow band? What is that?
  - The yellow strip represents fats and oils. While we do not want to have a lot of fat/oil in our day, it is important to have some in a healthy diet. We get fat/oil from various foods and also in meals when we add butter or oil to dishes.
- Now that we know what the 5 food groups are and why some bands are wider than others, I now want to know why do you think it is a pyramid shape? Why is it wide on the bottom and narrow at the top?
  - It is wide on the bottom and narrow at the top because it is important to have every food group every day, but within each

food group there are foods to have every day, sometimes and once in a while.

- The bottom of MyPyramid represents foods to have every day: these are called GO foods because they are the healthiest for us and provide us with good nutrition to be strong, healthy and grow. Think about a stop light. When the light is green, we go! We want to have these foods every day.
- The middle of MyPyramid represents foods to have sometimes: these are called SLOW foods because they are still fine to have sometimes, we don't want to just eat these foods. They either have less nutrition (like less fiber), or more fat and sugar. Try to have these foods only 3-4 times a week.
- The tip of MyPyramid represents foods to have once in a while: these are called WHOA foods because they are treats. These foods have a lot of added fat and sugar in them and do not provide a lot of good nutrition for our bodies. We want to limit WHOA foods to 1 time a week if possible.
- Now let's learn Go, Slow, Whoa foods for each food group.
  - Orange = Grains (Make half your grains whole=3oz)
    - Go: can anyone think of some "go grains"?
      - Whole wheat bread, brown rice, whole grain cereal, oatmeal
      - Why are these foods "go foods"?
        - Because they contain fiber. Fiber does a lot for our bodies. It helps us stay full longer and it helps clean out our insides so we stay healthy and go to the bathroom regularly.
    - Slow: can anyone think of some "slow grains"?
      - White bread, white pasta, white rice,
      - Why are these foods "slow foods"?
        - Because they have the fiber stripped from them. The brown color in whole wheat pasta, brown rice, and whole wheat bread is the outside of the grain—which is the part that contains fiber. When they make white bread, they take that outside part (called the bran) off and so there is very little fiber left.
    - Whoa: can anyone think of some "whoa grains"?

- Cakes, pastries, donuts
- Why are these foods “whoa foods”?
  - Because they have a lot of added fat and sugar and do not provide much nutrition for our bodies. However, they are still grains because they are made from flour.
- Green= Vegetables (vary your veggies=rainbow of color)
  - Go: can anyone think of some “go veggies”?
    - Carrots, lettuce, sweet potato, plain baked potato, broccoli
    - Why are these foods “go foods”?
      - Vegetables are also a great source of fiber. They also have a lot of vitamins and minerals in them that help us stay healthy.
  - Slow: can anyone think of some “slow veggies”?
    - Baked potato with butter, broccoli with cheese over it
    - Why are these foods “slow foods”?
      - Because there is added fat to these foods.
  - Whoa: can anyone think of some “whoa veggies”?
    - French fries
    - Why are these foods “whoa foods”?
      - French fries are deep fried in oil, so we don’t want to have a lot of French fries because they contain a lot of fat.
- Red= Fruit (focus on fruits)
  - Go: can anyone think of some “go fruit”?
    - Apples, oranges, bananas, kiwi
    - Why are these foods “go foods”?
      - Fruits, like vegetables and whole grains contain fiber. They also provide a lot of vitamins and minerals to be healthy.
  - Slow: can anyone think of some “slow fruits”?
    - Canned fruit—try to choose fruit in natural juice; juice
    - Why are these foods “slow foods”?



- because they do not contain fiber. When we squeeze an orange, the juice comes out right? but we don't get the fiber that goes along with the orange. So there is no fiber in juice. Try to only have 4oz of 100% fruit juice a day.
- Whoa: can anyone think of some "whoa fruits"?
  - Apple pie
  - Why are these foods "whoa foods"?
    - Because there is a lot of added sugar and fat.
- Blue= Milk (get your dairy foods, 3-a-day)
  - Go: can anyone think of some "go milk"?
    - Fat free or 1% milk, low fat yogurt and low fat cheese
    - Why are these foods "go foods"?
      - Milk has a lot of vitamins and minerals to keep our bones and teeth strong. But we want to choose low fat options.
  - Slow: can anyone think of some "slow milk"?
    - 2% milk, yogurt and cheese, frozen yogurt
    - Why are these foods "slow foods"?
      - There is more fat and some added sugar (frozen yogurt)
  - Whoa: can anyone think of some "whoa milk"?
    - Whole milk, ice cream, shakes
    - Why are these foods "whoa foods"?
      - Because there is a lot of added sugar and fat.
  - What about flavored milk (chocolate, coffee, etc)?
    - As long as it is fat free or 1% it is a GO food.
- Purple= Meats & Beans (go lean with protein)
  - Last group! You tell me....which would be a go, slow, whoa? Choose from grilled chicken, chicken with the skin on, and fried chicken.
    - Go- grilled, slow- with skin, whoa- fried
  - Go: other "go M&B"
    - Chicken and fish that is baked or broiled, deli turkey, beans, eggs, peanut butter and seeds.

- Why are these foods “go foods”?
  - These are lean options—the chicken and fish are low in fat. Beans are very low in fat. Eggs have a little bit of fat, but pack a lot of nutrition in a tiny egg! Peanut butter does have fat in it, but it is a healthy fat, and in small amounts it is okay to have every day (1 tablespoon)
- Slow: other “slow M&B”
  - Chicken with the skin on it, lean beef
  - Why are these foods “slow foods”?
    - There is a little more fat in them
- Whoa: other “whoa M&B”
  - Fried chicken or fish, fattier meat, bologna, hot dogs
  - Why are these foods “whoa foods”?
    - Because there is a lot of added fat.
- Lastly there is the stick figure running up the side of MyPyramid. What do you think that means?
  - It means while eating healthy is important to stay healthy and grow, it is also important to be physically active every day. Try to get 60 minutes or more every day of physical activity.
- Remember to get kids involved by allowing them to choose the entree or lean protein, grain (whole), vegetable, fruit, and/or dairy food.
- Food shopping with children works best when they are not hungry.
  - Shop the perimeter of the store for healthy meats, fruits, veggies, and dairy.
  - Encourage children to choose a new item that appeals to them.
  - To increase your fruit and vegetable intake, try dividing the shopping cart in half with a piece of tape where the front section can be for fruits and vegetables, the back section for whole grains, meats and beans, and dairy foods. Only leave the shelf space of the cart for snacks and other treats.
- Administer MyPyramid handouts and incentives (SNAP-Ed recipe booklets).
- Food demo (see attached recipe schedule)

## Lesson 4: “Promoting the Family Mealtime”

### Objectives:

- Families will learn three steps/strategies to increasing the frequency of family meals.
- Families will identify and attempt a strategy to overcome a barrier to eating regular family meals.

### Materials

- Incentives (SNAP-Ed measuring cups)
- Four week planner
- Weekly Planner
- Food demo

### Introduction

- Review previous lessons
- Week 1:
  - Introduction to what family mealtime means to everyone. Ask how often do all the people who live in your home sit down and eat a meal together. Ask participants why they think family mealtime might be so important:
  - Review the benefits of regular family meals
- Week 2:
  - 5 tips to make family meals more enjoyable
  - Add meals gradually
  - Plan tasty menus
  - Set an appealing table
  - Minimize distractions
  - Enjoy conversations
- Week 3:
  - Review MyPyramid and the 5 food groups.
  - Grains (6oz half whole), vegetables (vary your veggies), fruits (focus on fruits), milk (get your dairy foods), meats and beans (go lean with protein).

### Lesson

- Using what we know and identifying barriers.

- Discuss some of the participants' barriers to eating regularly as a family. (Time, tired, food cost, television, kids wanting to grab and go, etc). Everyone experiences these barriers to eating together, but it's important to realize how important eating together as a family regularly is and how it can affect their child's development.
- ASK: Has anyone made any changes they would like to share?
- All of what we learned can be condensed into 3 simple steps to increase how often families eat together as well as the quality of the meal. Plan, Prepare, and Enjoy.

-Plan Before the week starts you can look through the calendar to choose a time where everyone can be there. Identify what obstacles are getting in the way of family meals (busy schedules, no supplies in the house, no time to cook).

\*ASK: the families how they can overcome these obstacles. (i.e. if time is the problem, try doing some prep work on weekends or even completely preparing a dish ahead of time and putting it in the freezer).

-Prepare Gather all your supplies and involve the kids in cooking prep. Try assigning simple tasks such as putting plates on the table, tossing the salad, pouring a beverage, folding the napkins, or being a "taster" are appropriate jobs for preschoolers and school-age kids. Older kids may be able to pitch in even more, such as getting Ingredients, washing produce, mixing and stirring, and serving. If you have teens try assigning them a night to cook, with you as the helper. Being upbeat and pleasant as you prepare the meal can rub off on kids, be careful because so can griping and being down.

\*ASK: the families if they would be willing to try one or more of these strategies in their home. Which ones?

-Enjoy! Stress the importance of making dinner time a pleasant time and a chance for EVERYONE in the family to wind down from the day (work/school). Don't think about the chores after dinner (dishes etc.). Wait until everyone is seated before people start eating. Even try things like thanking the cook or saying grace. This is an opportune time to model good manners.

-Wrap up and recap the three steps (Plan, Prepare, and Enjoy). -Discuss the goals of family meal time (making your kids feel nurtured, modeling behaviors, connect as a family). Remind families to try to keep tension/discipline at a minimum during meal time. Interact positively and try to keep conversations going. Ask about each other's day and about foods they might want to try later in the week.

Administer Weekly planner, four week planner, incentives and food demo.

## D. CONTROL GROUP LESSON PLAN OUTLINE

### Standard 4-week SNAP-Ed Curriculum



#### Lesson 1: MyPyramid

##### Objectives:

- Parents will be able to identify the 5 food groups in MyPyramid.
- Parents will be able differentiate between foods to have every day, sometimes and once in a while.

##### Materials:

- MyPyramid Poster
- MyPyramid handout
- “Go, Slow, Whoa” handout

#### I. Introduction

- **Hang poster of MyPyramid**
- Has anyone seen this (MyPyramid) before? What is it?
  - o *It's MyPyramid*
- Why is it called “MyPyramid”?
  - o *Because while everyone should have all 5 food groups and some fat/oil in their day, everyone needs different amounts, so it is personal to them...so it's called “My” pyramid.*
- Today we are going to learn about MyPyramid, the food groups it contains and the food/drinks within those groups.

#### II. Lesson

- There are 6 color bands, but only 5 food groups. Does anyone know the 5 food groups?
  - o *Grains, Vegetables, Fruit, Milk, Meat & Beans. The other band is fat/oils which we'll talk about later.*
- Does anyone notice that each band is a different width?
  - o *That is because we need different amounts from each food group*
- Review the 5 different food groups, colors, and amounts that should be aimed for daily
  - i. Orange = Grains: 6 oz/day
    - Largest group because we should be eating the most from this group.
    - We get most of our energy from these foods.

- Includes foods like pasta, rice, breads, crackers, cereal...
- ii. Green= Vegetables: 2 ½ cups/day
  - Second largest group, means we should also be eating a lot of foods from this food group.
  - Vegetables are good for you because they contain many vitamins and minerals that are important to the body and keeping it healthy.
  - Includes foods like broccoli, corn, potatoes, spinach, lettuce, carrots...
- iii. Red= Fruit: 2 cups/day
  - Another large food group on the pyramid. If you don't eat your vegetables then you should definitely be eating your fruit.
  - Fresh, frozen, canned, or dried, doesn't matter, fruit is fruit.
  - Includes foods like apples, berries, watermelon, oranges, grapes...
- iv. Blue= Milk: 3 cups/day
  - Important food group because all the foods in the food group contain calcium which is important for forming healthy strong bones and teeth and is important for muscle function in the body.
  - Includes foods like yogurt, milk, cheese, and even ice cream (but isn't the best source of calcium).
- v. Purple= Meats & Beans: 5-6 oz/day
  - Smallest food group on the pyramid but still important to a healthy diet.
  - Foods in this group are high in protein which we need to build our bodies and keep us strong. Protein makes up our muscles, hair, nails and skin.
  - Includes food like chicken, beef, fish, nuts, peanut butter, eggs and different kinds of dried beans.
- What about the yellow band? What is that?
  - o *The yellow strip represents fats and oils. While we do not want to have a lot of fat/oil in our day, it is important to have some in a healthy diet. We get fat/oil from various foods and also in meals when we add butter or oil to dishes.*

- Now that we know what the 5 food groups are and why some bands are wider than others, I now want to know why do you think it is a pyramid shape? Why is it wide on the bottom and narrow at the top?
  - o *It is wide on the bottom and narrow at the top because it is important to have every food group every day, but within each food group there are foods to have every day, sometimes and once in a while.*
  - o *The bottom of MyPyramid represents foods to have every day: these are called GO foods because they are the healthiest for us and provide us with good nutrition to be strong, healthy and grow. Think about a stop light. When the light is green, we go! We want to have these foods every day.*
  - o *The middle of MyPyramid represents foods to have sometimes: these are called SLOW foods because they are still fine to have sometimes, we don't want to just eat these foods. They either have less nutrition (like less fiber), or more fat and sugar. Try to have these foods only 3-4 times a week.*
  - o *The tip of MyPyramid represents foods to have once in a while: these are called WHOA foods because they are treats. These foods have a lot of added fat and sugar in them and do not provide a lot of good nutrition for our bodies. We want to limit WHOA foods to 1 time a week if possible.*
- Now let's learn Go, Slow, Whoa foods for each food group.
  - i. Orange = Grains
    - Go: can anyone think of some "go grains"?
      - *Whole wheat bread, brown rice, whole grain cereal, oatmeal*
      - Why are these foods "go foods"?
        - *Because they contain **fiber**. Fiber does a lot for our bodies. It helps us stay full longer and it helps clean out our insides so we stay healthy and go to the bathroom regularly.*
    - Slow: can anyone think of some "slow grains"?
      - *White bread, white pasta, white rice,*
      - Why are these foods "slow foods"?
        - *Because they have the fiber stripped from them. The brown color in whole wheat pasta, brown rice, and whole wheat bread is the outside of the grain—which is the part that contains fiber. When they make white bread, they take that*

*outside part (called the bran) off and so there is very little fiber left.*

- Whoa: can anyone think of some “whoa grains”?
  - *Cakes, pastries, donuts*
  - Why are these foods “whoa foods”?
    - *Because they have a lot of added fat and sugar and do not provide much nutrition for our bodies. However, they are still grains because they are made from flour.*

i. Green= Vegetables:

- Go: can anyone think of some “go veggies”?
  - *Carrots, lettuce, sweet potato, plain baked potato, broccoli*
  - Why are these foods “go foods”?
    - *Vegetables are also a great source of fiber. They also have a lot of vitamins and minerals in them that help us stay healthy.*
- Slow: can anyone think of some “slow veggies”?
  - *Baked potato with butter, broccoli with cheese over it*
  - Why are these foods “slow foods”?
    - *Because there is added fat to these foods.*
- Whoa: can anyone think of some “whoa veggies”?
  - *French fries*
  - Why are these foods “whoa foods”?
    - *French fries are deep fried in oil, so we don't want to have a lot of French fries because they contain a lot of fat.*

ii. Red= Fruit

- Go: can anyone think of some “go fruit”?
  - *Apples, oranges, bananas, kiwi*
  - Why are these foods “go foods”?
    - *Fruits, like vegetables and whole grains contain fiber. They also provide a lot of vitamins and minerals to be healthy.*



- Slow: can anyone think of some “slow fruits”?
  - *Canned fruit—try to choose fruit in natural juice; juice*
  - Why are these foods “slow foods”?
    - *because they do not contain fiber. When we squeeze an orange, the juice comes out right? but we don’t get the fiber that goes along with the orange. So there is no fiber in juice. Try to only have 4oz of 100% fruit juice a day.*
- Whoa: can anyone think of some “whoa fruits”?
  - *Apple pie*
  - Why are these foods “whoa foods”?
    - *Because there is a lot of added sugar and fat.*

### iii. Blue= Milk

- Go: can anyone think of some “go milk”?
  - *Fat free or 1% milk, low fat yogurt and low fat cheese*
  - Why are these foods “go foods”?
    - *Milk has a lot of vitamins and minerals to keep our bones and teeth strong. But we want to choose low fat options.*
- Slow: can anyone think of some “slow milk”?
  - *2% milk, yogurt and cheese, frozen yogurt*
  - Why are these foods “slow foods”?
    - *There is more fat and some added sugar (frozen yogurt)*
- Whoa: can anyone think of some “whoa milk”?
  - *Whole milk, ice cream, shakes*
  - Why are these foods “whoa foods”?
    - *Because there is a lot of added sugar and fat.*
- What about flavored milk (chocolate, coffee, etc)?
  - *As long as it is fat free or 1% it is a GO food.*

### iv. Purple= Meats & Beans

- Last group! You tell me....which would be a go, slow, whoa? Choose from grilled chicken, chicken with the skin on, and fried chicken.

- *Go- grilled, slow- with skin, whoa- fried*
- Go: other “go M&B”
  - *Chicken and fish that is baked or broiled, deli turkey, beans, eggs, peanut butter and seeds.*
  - Why are these foods “go foods”?
    - *These are lean options—the chicken and fish are low in fat. Beans are very low in fat. Eggs have a little bit of fat, but pack a lot of nutrition in a tiny egg! Peanut butter does have fat in it, but it is a healthy fat, and in small amounts it is okay to have every day (1 tablespoon)*
- Slow: other “slow M&B”
  - *Chicken with the skin on it, lean beef*
  - Why are these foods “slow foods”?
    - *There is a little more fat in them*
- Whoa: other “whoa M&B”
  - *Fried chicken or fish, fattier meat, bologna, hot dogs*
  - Why are these foods “whoa foods”?
    - *Because there is a lot of added fat.*
- Lastly there is the stick figure running up the side of MyPyramid. What do you think that means?
  - o *It means while eating healthy is important to stay healthy and grow, it is also important to be physically active every day. Try to get 60 minutes or more every day of physical activity.*

## Lesson 2- Vary Your Veggies and Focus on Fruits

### Objectives:

- Parents will be able to explain why it is important to eat foods from the Fruits and Vegetables groups.
- Parents will identify the five subgroups of vegetables and foods that belong in each of them.
- Parents will identify barriers to eating a variety of fruits and vegetable.
- Parents will describe how to make healthier choices from the Vegetables and Fruits groups (those without fat or added sugar).

### Materials:

MyPyramid Poster  
“What Counts as One Cup of Vegetables” handout  
“What Counts as One Cup of Fruit” handout  
Fruit and Vegetable Bingo (optional)

### I. Introduction- Fruits and Vegetables

- Today’s topics are the fruits and vegetables group. They are represented on MyPyramid by the green and red bands. I am going to explain to you that eating fruits and vegetables will make you strong and healthy.
- Who thinks they eat enough fruits? Enough vegetables?  
*o Most people don’t eat enough vegetables, especially the dark, green leafy vegetables and orange vegetables.*

### II. Fruits:

- Fruit group is represented by the “Red” band on MyPyramid.
- You should be aiming for 2 cups of fruit on average every day.
- How do we get 2 cups a day?
- What is a serving size?
  - o ½ cup of chopped fruit or canned fruit (drained) = ½ cup*
  - o ½ cup of apple sauce = ½ cup*
  - o ½ of a large banana or orange = ½ cup*
  - o 15 grapes = 1 cup*
  - o ½ cup of fruit juice- make sure its 100% = ½ cup*
  - o ¼ cup of dried fruit like dried grapes (raisins), cherries or pineapple like we put in trail mix = ½ cup fruit*
  - o 1 medium apple, orange, pear, or banana- think of the size of your fist or tennis ball =1 cup*
- Discuss the importance of fruits in a healthy diet. Why is vitamin A important?
  - o It is good for your eyes. We find vitamin A in carrots, sweet potatoes and mangos—orange colored fruits and vegetables.*
- Why do we want to get plenty of vitamin C?

- o *Helps heal cuts and other wounds and helps to keep your immune system strong. We find vitamin C in citrus fruits and vegetables like oranges, strawberries and red bell peppers.*
- Fruit contains fiber – important for digestion. We learned about fiber when we talked about the Grains food group and eating whole grains.
- Have kids think of ways to get more fruits in their diets
  - o *As a snack, in cereal or oatmeal; smoothies, dried fruit in trail mixes, 100% fruit juice, canned or frozen fruit.*

### III. Vegetables:

- Vegetable group is represented by the “Green” band on MyPyramid.
- You should be aiming for 2 ½ cups of vegetables on average everyday.
- What counts as a serving size?
  - o 1 cup of raw of lettuce or leafy greens = ½ cup
  - o ½ cup cooked vegetables = ½ cup
  - o ½ cup of canned or frozen vegetables = ½ cup
  - o 6 baby carrots = ½ cup
  - o ½ cup of beans = ½ cup
  - o ½ cup of mashed potatoes or squash = ½ cup
  - o ½ a cup of tomato or spaghetti sauce = ½ cup
  - o ½ cup of vegetable juice = ½ cup
- Discuss that vegetables are also important. While most fruits grow on trees, vegetables come from other parts of the plant...
  - o What are some root vegetables?
    - *potatoes, carrots, beets*
  - o What are some stem vegetables?
    - *celery, broccoli, asparagus*
  - o What are some leafy vegetables?
    - *lettuce, spinach*
  - o What are some flower vegetables?
    - *broccoli, cauliflower*
  - o What are some seed vegetables?
    - *peas, beans*
  - o What about corn?
    - *it's a grain, and more importantly, a WHOLE grain.*
- Vegetables contain Vitamin A, Vitamin C, Vitamin E, and some B vitamins which we said is good for growth, healthy skin and nails and a healthy immune system. Some vegetables can also have iron which is important for blood and keeping energy levels up. These vegetables include broccoli, spinach, and asparagus. Calcium which is good for bones can also be found in vegetables like broccoli and kale.
- Vegetables are grouped into subcategories based on their nutrients in them.

<b>Dark green</b>	<b>Orange</b>	<b>Dry beans/peas</b>	<b>Starchy</b>	<b>Other</b>
Spinach Broccoli Collard Greens Kale Romaine	Carrot Pumpkin Sweet potato Winter squash	Kidney beans Pinto beans Split peas Black beans	Corn Potato Green peas	Cucumber Green beans Tomato Green pepper

- 
- What vegetables are favorites for a lot of us?
- What things get in the way of eating different kinds of vegetables?
  - o What could you or other do when choosing snacks?*

**IV. Calories in fruits and vegetables- where can you find them?**

- Go, Slow, Whoa- We have talked about eating foods from the bottom of MyPyramid and as we move up MyPyramid the foods have more fat and sugar. How can we take a fruit or vegetable and change it from a Go food to a Whoa food?
  - o Example: a baked potato vs. French fries*
  - o Example: a fresh apple vs. apple pie*
  - o Can you think of other examples?*

**V. Fruit and Veggie Bingo**

- Give every parent a bingo card and place markers. Randomly choose fruit and veggie cards, read the tip about that fruit or veggie and have the parents look for it on their place card. The first parent to get 5 across, down or diagonal wins.

### Lesson 3: Nutrition Facts Label

#### Objectives:

- Parents will identify how to read and interpret the Nutrition Facts Label.
- Parents will explain how to use the 5% and 20% Daily Value guides to get LESS of some nutrients and get ENOUGH of others.
- Parents will compare food labels to determine which food would be the healthier choice.

#### Materials:

- Nutrition Facts Label Poster
- “Get the Facts” handout

**The overall theme of this lesson is to make healthy choices based on the Nutrition Facts Label.**

#### I. Introduction

- Today we are talking about the Nutrition Facts Label.
  - o Has anyone seen this before?
- Where can you find a Nutrition Facts Label?
  - o *It is required to be on every food and beverage product.*
  - o *Fresh fruits and vegetables do NOT have to provide a label.*

#### II. Activity #1: Label Reading

- Why is the Nutrition Facts Label on products?
  - o *It is required by FDA to appear on all products except fresh fruits and vegetables.*
  - o *It serves as a tool to help us make healthy food choices.*
- Example:
  - o Has anyone ever tried to buy something at the store, like chips or cereal, and noticed there are many different options?
  - o How do you know which one is the healthier choice? That’s where the Nutrition Facts Label helps us.

☐ How many of you have ever seen or looked at a Nutrition Facts Label?

- What do you look at?

- Some people look at just fat, calories, cholesterol...etc
  - However, we want to look at the whole label, not just parts of it.
  - What do you think is the first thing you should look at when reading the Nutrition Facts Label?
    - Serving size – This is the usual amount of the food consumed at one time. The Nutrition Facts Label describes the nutrients for one serving of the food.
      1. Why do you think we look at serving size first?
        - Because if you do not look at the serving size, you do not know what the Nutrition Facts Label is representing (is the information for 2 cookies or 4 cookies?)
      - b. What do we look at next?
        1. Servings per container
          - This tells you how many servings are in the package.
        2. Why would this be important to know?
          - Example: Soup
            - ☐ Let's pretend we are looking at a label for a can of soup.
            - ☐ It tells us that ONE cup of soup is a serving, and there are TWO servings per container.
            - ☐ Many people would just eat the whole can. So what do we have to do with all of the information on the Nutrition Facts Label? (*Double it!*)
- ☐ Let's go through all of the nutrients (follow along with your handout)
  - a. Calories – Calories give our body energy. Calories provide a measure of how much energy you get from a serving of food.
    - o This product contains 250 calories from one serving. So if we ate the whole container, how many calories is that? (*500 calories*)
  - b. Grams versus % Daily Value
    - o Each nutrient is represented in grams (g) or milligrams (mg).
    - o All of the nutrients (except Trans Fat, Sugars and Protein) also have a % Daily Value. The % Daily Value represents how much of a nutrient that food is providing you compared to what you need for the entire day.
      - For example: the Sodium in this food accounts for 20% of all the sodium you need in your day (maximum amount is 2,300mg recommended every day. So you

can see that 470mg in this food  $\square$  2,300mg in your whole day = .20 (or 20%)

- Why don't Trans Fat, Sugars and Protein have a % Daily Value?
  - a. There is no recommended amount for Trans Fat and sugar, but you want to get as little as possible..
  - b. For Protein, every person needs a different amount based on his or her body weight.
  - c. Total fat – Everyone needs some fat in his or her diet to stay healthy.
- o Saturated fat
  - Found in:
    - d. Animal products like foods in the Milk and Meats groups
    - e. Some oils (like coconut)
  - It is recommended to get under 10% of saturated fat in your daily diet because saturated fat can raise cholesterol levels.
- o Trans Fat – new to the label in 2006
  - Foods with Trans Fat
    - f. Trans Fat has been removed from most food because it is unhealthy. However, it can still be found in bakery and pastry products.
    - g. Limit –get a very small amount because this is an unhealthy fat.
- o Monounsaturated and Polyunsaturated (unsaturated fats)
  - Found in :
    - h. Peanut butter, avocado, nuts, fish (like salmon), and oils (olive, canola, vegetable)
  - Unsaturated fats are healthier fats because this type of fat does not raise “bad” cholesterol (LDL cholesterol) levels.
- c. Cholesterol – Where does it come from?
  - Animal products. You see cholesterol only in products that come from animals (like milk). Why would cookies have cholesterol in them? (*eggs used to make cookies*)
- d. Sodium – What is sodium? Salt



- o Sodium can raise our blood pressure. Too much can be dangerous for our heart.
- o Frozen, processed, and canned foods
  - Usually have higher amounts of sodium than fresh or unprocessed foods. Sodium is added to help preserve food.
- o What to look for on the label
  - When you go shopping, look for foods naturally low in sodium or foods labeled “Low Sodium” or “No Added Salt” on your canned goods.

e. Total Carbohydrates – One of our major energy (calorie) sources

- o Found in all food groups (mainly dairy, grains, fruit and starchy vegetables like peas, corn, potatoes and beans.)
- o Dietary Fiber
  - There are two types of Fiber: soluble and insoluble
    - i. Soluble
      - i. Helps to keep us full longer (so we eat less between meals)
      - ii. Can help lower our blood cholesterol (the “bad” cholesterol called LDL cholesterol)
    - b. Insoluble
      - iii. Helps us to stay regular/go to the bathroom
  - Food sources
    - j. Whole grain products, fruits, vegetables and beans/legumes

o Sugars

- Natural versus Added sugars
  - k. Natural Sugar
    - i. Some foods naturally contain sugar. Are fruits sweet? Yes! They contain natural sugar. Look at a plain milk carton; does it contain sugar? Yes! It also has natural sugar.
    - ii. These foods don’t have any added sugar.
  - l. Added Sugar
    - i. This is sugar that is added to a food that does not naturally have any in it. For

example, Frosted Flakes cereal has more sugar than Corn Flakes because of the added sugar on them.

- f. Protein – Helps build strong muscles
  - o Where can you find protein?
    - The Meat & Beans food group and Milk food group are the major sources
    - Choose lean choices = lower in fat (lean cuts of meat, chicken and fish)
- g. Vitamins – Vitamins A and C are required to be on the label. Some foods add other vitamins to the label if they contain them (like a cereal box!)
  - o Vitamin A – good for your eyes
    - Found in
      - m. Dark, green leafy vegetables
      - n. Red and orange fruits and vegetables
  - o Vitamin C – prevents colds and helps heal cuts
    - Found in
      - o. Citrus fruits and some vegetables
- h. Minerals – Calcium and Iron are required to be on the label. Some foods add other minerals to the label if they contain them.
  - o Calcium – Important for strong bones and teeth
    - Found in
      - p. Dairy products are the best source
    - Keeps bones strong and long
  - o Iron – Important for Healthy Blood and to get oxygen throughout our body
    - Found in
      - q. Meats, beans, spinach and fortified products

\*Make note that the %Daily Value is based on a 2,000 calorie diet, so you may need a little less or a little more of a nutrient if you require more or less calories in a day.

☐ %Daily Value—5% is low, 20% is high

- 5% is low—this can be a good thing when you want to limit a nutrient (like fat) but not if you want plenty of a nutrient (fiber).
- 20% is high- this can be a good thing when you want plenty of a nutrient (calcium) not if you want to limit a nutrient (sodium).

- o ASK → Can anyone tell me which nutrients should be 5% or less on the Nutrition Facts Label in order to be considered a healthy option?
  - Look at the poster's blue section showing fats, cholesterol, and sodium. Get LESS of these nutrients. Remember, you want 5% or less of these nutrients.
  - Eating too much of these nutrients is linked to being overweight and to certain diseases like type 2 diabetes and heart disease.
  
- o ASK→ Can anyone tell me which nutrients you think should be 20% or more on the Nutrition Facts label in order to be considered a healthy option?
  - Look at the poster's purple section showing fiber, vitamins, and minerals. Get ENOUGH of these nutrients. Remember, you want 20% or more of these nutrients.

□ Nutrient Dense Foods

ASK→ What does nutrient-dense mean?

- For the amount of calories you are getting, nutrient-dense foods provide high amounts of vitamins, minerals, and other nutrients compared to other foods of equal calories.
- For example:
  - ☑ Apple versus a handful of Gummie bears
    - Both have ~70 calories
    - Apple contains vitamins, minerals, natural sugar and fiber
    - Gummie Bears contain added sugar

ASK→ What difference does it make if you pay attention to the kinds of food you eat?

- Eating many kinds of foods from all the food groups makes it easier to get all the nutrients you need to grow and stay healthy.

#### **Lesson 4: Think Your Drink Lesson Plan**

Age: Elementary through High school parents

##### Nutrition Objectives:

- Participants will be able to determine the amount of sugar in common beverages.
- Participants will be able to differentiate between natural sugars and added sugars.
- Participants will be able to identify healthier beverage choices.

##### Materials Needed:

- 6 drinks
  - o Low-fat plain milk
  - o Low-fat chocolate milk
  - o 100% juice
  - o Fruit drink (not 100%) (Hi-C)
  - o Soda (Cola)
  - o Energy Drink (Rock Star)
- 6 sugar packet strips for each of the above drinks.

##### Think Your Drink Display and Activity Instructions (using math):

- Pass out the 6 drinks to parents (have parents work in groups).
- Have parents determine number of grams of sugar in the whole drink by:
  - o Finding the grams of sugar on the Nutrition Facts Label.
  - o Some drinks have 2 servings per container (Rock Star and Chocolate milk). In this case the parents need to multiply the grams of sugar noted on the Nutrition Facts Label by 2.
- Have parents figure out how many sugar packets are in the whole drink by:
  - o Dividing the grams of sugar by 4. This will give you the number of sugar packets in the whole drink.

- Call up the parent with the Rock Star bottle. Ask them how many packets of sugar in the whole drink (16 packets). Place it on the left hand side of the table and tape the corresponding sugar packets under the drink.
- Continue with chocolate milk, Coca-cola, orange juice, Hi-C, and low-fat plain milk.
- Start with Nutrition Talking Point #1.

Think Your Drink Display and Activity Instructions (no math):

- Pass out the 6 drinks to parents.
- Have the parents with the drinks come up to the front of the class.
- Ask the other parent to guess which beverages have the most sugar to the least sugar and have the parents with the drinks move accordingly.
- Once the order is finalized, rearrange the parents with the drinks to the correct order if necessary.
- Start with Nutrition Talking Point #1.

Nutrition Talking Points:

1. Explain that the sugar content does not always determine how healthy a drink is.
  - a. Based on this line up, it looks like soda is a healthier option than chocolate milk and Hi-C is healthier than 100% orange juice, but is that true?
    - i. *No, chocolate milk and 100% juice has a lot of vitamins and minerals that keep our body healthy that soda and juice drinks do not provide.*
  - b. Why does chocolate milk have more sugar than soda?
    - i. *It has NATURAL sugar (the milk) and some added sugar (from the chocolate syrup).*
  - c. Why does Hi-C have less sugar than 100% orange juice?
    - i. *Hi-C is not 100% juice. The sugar in Hi-C is ADDED sugar and 100% orange juice is all NATURAL sugar from*

*the orange fruit. Hi-C is also a smaller container than 100% orange juice.*

- d. Explain the difference between natural (indicated by cow or fruit pictures) and added sugars.
  - i. Natural Sugar- in the food and drink naturally.
    - 1. Lactose- milk sugar...when you get milk from a cow, there is sugar naturally found in the milk
    - 2. Fructose- fruit sugar...when you squeeze an orange and drink its juice, there is sugar naturally found in the fruit
  - ii. Added Sugar- manufacturers add sugar to make the beverage.
- e. Does soda have natural or added sugar?
- f. Does low-fat plain milk have added or natural sugar?
- g. Does low-fat chocolate milk have natural or added sugar?

**2. Ask the parent to split the drinks into Go (every day drink), Slow (sometimes drink), or Whoa (once in a while drink) groups**

- a. Go: low-fat milk, low-fat chocolate milk, 100% orange juice*
- b. Slow Hi-C*
- c. Whoa Rock Star, Coke*
- d. Explain:**
  - i. Go drinks:** Natural sugar, protein, vitamins and minerals. Drink every day.
  - ii. Slow:** Added sugar and some vitamins and minerals. Limit to sometimes.
  - iii. Whoa:** Added sugar and caffeine, little to no vitamins and minerals. (empty calories) Limit to once in awhile or special occasions.