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Healthy Families: A Family-Based Community Intervention To Address Childhood Obesity

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Abstract

The objective of this study was to determine the effectiveness of Healthy Families, a family-based community intervention, in improving the knowledge, self-efficacy, and health behaviors of overweight/obese children and their families as well as to explore lessons learned. Results showed families who completed the program had significant improvements for children and parents in areas such as nutrition knowledge and self-efficacy in making healthy eating choices as well as participating in physical activity. Additionally, families reported decreasing their intake of sugar-sweetened beverages. Participating families and community partners provided valuable lessons for other communities seeking to implement a similar program.

Key words: physical activity, nutrition, family-based, community, obesity

Introduction

Obesity is a growing issue among children in the United States (Fryar, Carroll, & Ogden, 2012; Ogden, Carroll, Kit, & Flegal, 2014). This is concerning as childhood obesity is linked to negative health consequences (e.g., high blood pressure, asthma) (Borrell et al., 2013; Ebbeling, Pawlak, & Ludwig, 2002; Rosner, Cook, Daniels, & Falkner, 2013; WHO, 2000) as well as psychological problems (e.g., poor self-esteem) (Crossman, Sullivan, & Benin, 2006; Kinder, Carnethon, Palaniappan, King, & Fortmann, 2004; McElroy et al., 2004; Räikkönen, Matthews, & Salomon, 2003). Furthermore, obese children are more likely to become obese adults putting them at risk for additional health consequences (e.g., heart disease, type 2 diabetes) (Guo et al., 2000; Morrison, Glueck, Woo, & Wang, 2012; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997). Surprisingly, even with increases in the number of children and adolescents who are obese, few programs are available to give children the help necessary to reverse this trend (Nemet et al., 2005). Effective evidence-based interventions are needed to reduce childhood obesity and improve the health of children.

One promising avenue for reducing childhood obesity is through family-based interventions (Epstein, Valoski, Wing, & McCurley, 1994; Epstein et al., 2012; Golan & Crow, 2004; White & Klein, 2008). Family-based interventions are a viable method for impacting childhood obesity because of the large amount of influence families, especially parents, have on their child's health behaviors (e.g., provision of nutritious food, opportunities and encouragement for physical activity) (Kraak, Liverman, & Koplan, 2005; Lindsay, Sussner, Kim, & Gortmaker, 2006). A child is unlikely to be successful in changing their own health behaviors if their family is not willing to change their behavior (Freeman et al., 2012). Furthermore, children are more likely to be overweight if their parents are overweight (Berry, Savoye, Melkus,

& Grey, 2007; Mamun, Lawlor, O'callaghan, Williams, & Najman, 2005). Therefore, programs focused on the family are essential to improve the health behaviors of obese children.

A variety of family-based interventions have been developed to positively impact childhood obesity. These interventions vary by setting (e.g., schools, clinics, home) and format (e.g., in-person, online). One type of family-based intervention shown to be successful is when at least one parent and overweight or obese child attends the program together within a community setting (Cronk et al., 2011; McCormick, Ramirez, Caldwell, Ripley, & Wilkey, 2008; Robertson, Thorogood, Inglis, Grainger & Stewart-Brown, 2012; Sacher et al., 2010; Edmunds, Waters, & Elliott, 2001) This type of family-based program utilizes a community partner to provide the program at a trusted and accessible location within the community (e.g., community-based health centers, local community centers).

Several family-based community interventions have positively impacted children's health including improvements in body mass index (BMI), fitness, eating patterns, self-esteem, and quality of life, as well as influencing parent's fitness and quality of life (Edmunds et al., 2001; McCormick et al., 2008; Robertson et al., 2012; Sacher et al., 2010). However, few studies have focused on the impact on both child and parent health as well as multiple racial/ethnic groups. Research is needed to determine if similar interventions can be successful for children and parents in diverse populations.

Healthy Families is one family-based community intervention that may positively impact the health of diverse families. Healthy Families was initially developed in 2007 by a community collaborative of healthcare systems, universities, a local health department, cooperative extension, and other health organizations who were focused on improving the health of families

to reduce childhood obesity in a Midwest community. This program was originally implemented at one site.

Over the last 10 years, the number of Healthy Families sites increased from one to five due to additional community partners who saw the need to expand the reach of the program. Additionally, a previous evaluation as well as feedback from families and community partners, deemed the program as too long in duration (originally 12-weeks, 1 hour 15 minutes in length) and modifications were necessary to fit the needs of the community. Community partners once again collaborated in 2012 to modify the program based on past successes and lessons learned. Consequently, the curriculum was condensed to an 8-week format and weekly classes were extended to an hour and thirty minutes. The program also narrowed its scope of content and objectives to assure effective and concise lessons. The application of a clinician referral option in the patient electronic health record (EHR) within the associated healthcare systems further expanded recruitment.

Implementation of the updated curriculum began in the spring of 2013. Therefore, the primary purpose of this paper was to determine the effectiveness of the revised Healthy Families program in improving the health knowledge, self-efficacy, and behaviors of overweight and obese children and their families. A secondary purpose was to provide lessons learned to other community nurses and health educators, as this group of healthcare professionals could find such a program useful to supplement education provided within a clinic or hospital.

Methods

Intervention

Recruitment of children ages 6-18 years old who were overweight or obese ($\geq 85^{th}$ BMI percentile) and their families occurred through medical clinics (via doctor, nurse or patient care

navigator referrals), advertisements, community partnerships, and local health fairs. At three of five locations, Healthy Families was included in the EHR as a community referral for qualifying patients. A program coordinator from one of the five sites contacted referred families and registered them for the program in one of three yearly sessions held at each site beginning in the spring of 2013 through the spring of 2014.

Guided by the Transtheoretical Model and Social Cognitive Theory, the goal of Healthy Families was to help families learn about and increase their self-efficacy (measured as confidence) to make healthier choices related to physical activity and nutrition as well as related behavioral health topics (i.e., emotional eating, motivation for adopting healthy behaviors, offering encouragement) (Prochaska, Redding, & Evers, 2008; McAlister, Perry, & Parcel, 2008). Each week, families participated together in 30 minutes of physical activity followed by a one-hour nutrition lesson with an associated behavioral health lesson, healthy snack, and time to set family healthy habit goals. Table 1 provides an overview of the major lesson objectives covered through the duration of the program with sample activities. A team of health professionals taught Healthy Families. Each site team consisted of a program coordinator in charge of day-to-day operations as well as a nutrition (e.g., registered dietitian), behavioral health (e.g., therapist), and physical activity (e.g., personal trainer) leaders who were in charge of teaching and leading activities about those respective topics. Families received a free family YMCA membership for the duration of the program and a $50 food gift card for completion of the program. The YMCA membership included three “Get Started” visits, outside of class time, for each family member to work one-on-one with a fitness expert to acquaint them with the exercise machines and develop a routine they could manage.

[Insert Table 1 approximately here]

Five different community organizations offered the revised 8-week Healthy Families program including two federally qualified health centers, a YMCA, a Hy-Vee grocery store, and a hospital. A local healthcare system Catholic Health Initiatives (CHI Health, formerly known as Alegent Creighton Health) provided an overall Healthy Families program coordinator and financial support to all sites. Specifically, community organizations provided convenient locations for classes as well as aided in recruitment (in-kind); delivered expert content in physical activity, nutrition, and behavioral health after normal workday hours (primarily paid for by CHI); and brought proficiency in evaluation (also funded by CHI). It is important to note that each location primarily served a unique racial/ethnic population including African American, Hispanic/Latino, and Caucasian. Thus, while the same program was delivered at all sites, minor modifications were made to the curriculum to be more culturally relevant for each specific population. For example, bilingual/bicultural staffing (rather than translation during class), Zumba lessons, and more traditional Hispanic food modifications were offered at the Spanish language class held at the community health center serving this population. Additionally, partnering with the national Cooking Matters® program to implement a Cooking Matters Grocery Store tour during one session of the program helped families learn about purchasing healthy foods on a budget (i.e., how to feed a family of four for under $10). Nutrition leads at each site were trained in the Cooking Matters curriculum and Cooking Matters provided written materials.

Measures

The Healthy Families team at each site collected baseline and post data. A self-report questionnaire collected data on families' knowledge and self-efficacy (confidence) of nutrition (meal planning, budgeting, healthier eating) and physical activity; and nutrition and physical activity behaviors. The program coordinator documented attendance at each session. Participants

were encouraged to fill out the questionnaire together as a family, but parents typically completed the questions. Previous evaluation feedback from families and community partners stated the previous evaluation was too burdensome. Thus, the re-development of the measures focused on being concise; however, this did not allow for a comprehensive assessment of all components of the Transtheoretical Model and Social Cognitive Theory.

Knowledge and self-efficacy. Knowledge and self-efficacy (confidence) were developed to assess three areas: meal planning and budgeting; healthier eating; and physical activity participation. The nine knowledge questions (n=1 meal planning, n=6 healthier eating, n=2 physical activity) consisted of completing a fill-in-the-blank response or circling a response "we don't know" to questions such as "How many servings of fruits and vegetables should you eat per day?" and "How many minutes of physical activity should adults get per week?" Five questions assessed self-efficacy (n=2 meal planning and budgeting, n=3 healthier eating, n=1 physical activity). Each self-efficacy question asked families to rate their confidence on an 11-item scale from 0% to 100% followed by an open-ended question of why or why not.

Nutrition and physical activity behaviors. An adapted version of the Youth Physical Activity and Nutrition Assessment by the Nebraska Department of Health and Human Services assessed these behaviors (NE DHHS, 2011). The questionnaire asked families to report the number of days/week they ate breakfast; cups per day of fruits and vegetables; times per day they ate high fat or sugary foods and sugar-sweetened drinks; and the number of days per week they ate a meal outside of home or school. Additionally, the number of minutes a day and days/week of low to moderate intensity and vigorous intensity were asked. These two numbers were combined to find the total minutes of activity per week. Families reported the above information

for each referred child and attending parent. Families also wore pedometers and completed a pedometer diary for one-week at both pre and post.

Healthy Families team effectiveness and lessons learned. At post, families completed a brief survey about the Healthy Families team to determine what they liked about the team as well as what they could have done better. Additionally, the Healthy Families overall program coordinator met with the site leads and staff as well as administrators after each session ended to document successes and potential improvements for the future.

This study received an exemption from the local institutional review board. Only those families who completed measures at both pre and post were included in data analysis.

Data Analysis

Data were input into Excel files and then all quantitative data were uploaded into SPSS 22 (Armonk, NY). Due to the sample size, data from all sites were combined and analyzed together. For the analyses of quantitative outcomes, paired t-tests were conducted for questions assessing self-efficacy (confidence) as well as healthy eating and activity habits. Questions assessing knowledge were determined to be correct or incorrect and analyzed using a McNemar's test. Answers to open-ended questions were analyzed through the process of immersion crystallization by two trained researchers to determine common themes (Borkan, 1999).

Results

General results are provided below. All families did not complete every question, thus the number of families who answered each question is reflected within each table.

Demographics

Of all children who participated, approximately half were Hispanic/Latino (50.4%) and

more than half were female (55.7%) (Table 2). A majority of parents who attended were also female (76.6%), while less than half of the siblings were female (45.8%). A majority of children ages 6-18 (81%), as well as a majority of parents (68.9%) were obese. Weight loss was not a focus of the program and there were no statistically significant differences in child or parent weight.

[Insert Table 2 Here]

Attendance and Program Completion

An overview of attendance is provided in Table 3. Of the 134 families (n=135 children, 1 family had 2 enrolled children) who enrolled in Healthy Families, 27 families attended 1-2 classes, 25 attended 3-5 classes and 69 attended 6-8 classes. The highest average number of families enrolled per site was 9 (Site 2) while the lowest average number of families enrolled was 3 (Site 3). Across all sites, approximately 50% of families completed the program. There were no significant differences in race/ethnicity or BMI between those who did and did not complete the program.

[Insert Table 3 Here]

Knowledge and Self-Efficacy

Meal planning and budgeting. Results suggested a statistically significant increase in knowledge of affordable ways to purchase fruits and vegetables (p=.0002) as well as confidence for creating a weekly family menu (p=.002) (Tables 4 and 5). Open-ended questions also suggest improved self-efficacy. One family reported, “We have gradually started implementing family menus and it is going good.” Another family stated they were confident in meal planning because “now we have many ideas.”

Additionally, there was a significant increase in families’ confidence for making a

weekly food budget (p<.0001). Families stated they were more confident "because they learned how to do it" and "they learned how to...shop seasonally." Further, there was a significant increase in the number of families who reported correct answers such as buying what's "on sale", "in season", and "using coupons" (p=.002).

[Insert Table 4 and 5 Here]

Healthier eating. Findings from the knowledge questions suggested there were significant increases in the percentage of families who correctly answered questions regarding the types of food groups that should be on their plate (all 5 food groups) (p=.008), the biggest food group (vegetables) (p=.012), and the smallest food group (dairy) (p=.001) (Table 4). Families also had significant improvements in self-efficacy for healthy eating (Table 5). Families stated the improvements were a result of their "new skills about labels and how to read them" and "we always knew healthy choices, but (the) kids now understand why it is important."

Physical activity. At post, there was a significant increase in the percentage of families who knew the adult physical activity guidelines and only a marginal increase in knowledge of children's guidelines (p=.002). Further, a significant increase was found in families' self-efficacy for making choices for physical activity (p<.0001). At post data collection, one family stated they were more confident "because we learned how important physical activity is to our health and we support each other." Another family reported, "We've set up many different options to negate schedule changes, weather, etc. I'm also being purposeful in scheduling exercise like I do appointments."

Nutritional and Physical Activity Behaviors

Healthy eating habits. Significant increases were found in the number of days breakfast was eaten for children and parents (p<.0001; p<.0001 respectively) (Table 6). There were

significant decreases for the number of high fat or sugary foods eaten per day for children and parents ($p<.001$; $p=.008$; respectively) as well as the number of sugar-sweetened drinks per day and the number of days eating out for children and parents ($p<.0001$; $p<.0001$, respectively).

[Insert Table 6 Here]

Physical activity. No significant differences in pedometer steps were found for children or parents. However, results from the questionnaire found a significant increase in the number of reported minutes children participated in low to moderate intensity activities ($p=.027$) as well as the number of minutes parents participated in vigorous activity ($p=.007$). Families reported incorporating more physical activity throughout their week by scheduling activities (e.g., Zumba classes, sports), utilizing gym memberships, and/or incorporating more walking into their daily routine. Approximately a third of families also mentioned they were doing these activities together as a family. One family reported "we do exercise together as a family" while another family stated they were "taking a walk or some other kind of physical activity as a family every evening." Families also mentioned planning their physical activity. One family stated "We are now more physically active, and more motivated, we plan our physical activity ahead of time."

Healthy Families Team Effectiveness and Lessons Learned

Feedback from families about the Healthy Families team at their site was overwhelmingly positive. Families thought staff were friendly, enthusiastic, fun, and supportive. Families mentioned that team members truly cared about them and wanted them to succeed. One family stated "They were fun, positive, caring, and really seemed to enjoy being here with us." Families also thought that team members were extremely knowledgeable as one family mentioned the team members were "very informative, full of information, the way everything was explained, the boys understood too!"

There were several important lessons learned in the implementation of the revised Healthy Families program from community partners throughout the project (Table 7). These lessons were not only utilized to improve the current Healthy Families program but also may be helpful for other communities implementing similar programs. An important lesson learned was that despite each location having a unique diverse group of families from different cultural backgrounds (i.e., one site was primarily Hispanic/Latino, one site was primarily African American) the Healthy Families model and toolkit was easily reproducible. While slight modifications were made to better address the unique cultural considerations of each site, these minor modifications did not appear to negatively impact the ultimate goal of Healthy Families, to improve family's health behaviors. For example, a wide variety of recipes for many ethnicities and food allergies were offered at all sites to encourage families to try "something new". Particularly for the site that was primarily Hispanic/Latino, community partners indicated that food plays a major role in how families socialize and connect with each other. Thus, while trying a variety of recipes and snacks was encouraged, it was recognized that encouraging how traditional foods could be made healthier (lower fat, sugar and salt in traditional ingredients; baking versus frying) was more readily accepted by families at this site.

Health literacy was also an important consideration in revising the recruitment and facilitation materials of this program as community partners indicated this had been a challenge in the past. Materials were re-written at a 6th grade reading level, and translated into Spanish for those families that preferred materials in Spanish. Workbooks and handouts included more visuals to support lessons, and more ethnically diverse photographs so that families could identify themselves and feel included in the curriculum. Healthy Family team members reported families appeared more engaged with the revised materials.

Another lesson learned was that consistent training and onboarding of site teams could be easier if provided through online modules. For organizations and clinics that had multiple sites across great distances that wanted to implement the Healthy Families program, it was more convenient for them to adopt the program if they had an easy way to train their Healthy Families team members.

[Insert Table 7 approximately here]

Discussion

The primary purpose of this paper was to determine the effectiveness of the revised Healthy Families program in improving the health knowledge, self-efficacy, and behaviors of overweight and obese children and their families. Similar to other family-based healthy lifestyle interventions, families within the Healthy Families program made positive improvements in their health knowledge, self-efficacy, and behaviors (Epstein, Valoski, Wing, & McCurley, 1990; Epstein et al., 1994; Habib-Mourad et al., 2014; Kalarchian et al., 2009; Kolotourou et al., 2015). Families who completed the program found significant improvements in health behaviors for both children and parents such as nutrition knowledge and confidence in making healthy eating choices (e.g., more fruits and vegetable consumption, less unhealthy food consumption), less barriers to buying/preparing healthy food, and knowledge and self-efficacy for physical activity recommendations and participation (Epstein et al., 1990; Epstein et al., 1994; Habib-Mourad et al., 2014; Kalarchian et al., 2009; Kolotourou et al., 2015). Several of these findings were consistent with other research including improvements in nutrition knowledge (Miller et al., 2016), number of fruits and vegetables that should be eaten each day (McGowan et al., 2013; Watters, Satia, & Galanko, 2007) eating low-fat foods, and bringing less unhealthy food into the home by not buying chips and soda (Miller et al., 2016).

It is important to note that while the length of the program was altered to increase completion of the program, only 50% of families completed Healthy Families. Completion of family-based interventions can be challenging (Wolcott, Huberty, McIlvain, Rosenkranz, & Stacy, 2011). Issues with transportation was the primary reason for reduced attendance to Healthy Families in the past (Wolcott et al., 2011). Healthy Families teams made increased efforts to communicate a variety of transportation options including working with local Medicaid providers to cover transportation to the program, offering bus passes, and renting a bus to transport families to the YMCA on the first meeting night for YMCA orientation. However, other barriers such as medical problems, school activities and sports, lack of support from family members, and lack of group cohesion (e.g., ability to connect with other families) may have led to continued reduced attendance.

Limitations

Although the findings from this evaluation are promising, there are several limitations that should be considered when interpreting the results. First, this evaluation did not include a comparison group. While a comparison group is difficult to find in community settings such as these, there is a chance that the significant changes that were found were not a result of the Healthy Families program. Second, the sample size was small and only half of participants completed the program. Also, due to inconsistency in completion of post-program surveys even fewer were able to be included in this evaluation. Thus, the findings from this study may not be generalizable to other populations. Third, responses were primarily self-reported and the only objective assessment (pedometers) found no significant improvements. Additional objective evaluation is needed to determine if these self-reported changes resulted in actual behavior or health changes. Finally, the evaluation tool used has not been validated and responses may not

reflect a true change in families' behaviors.

Summary

Since 2007, Healthy Families partners have strived to help overweight or obese children and their families in the community improve their health behaviors. The findings from the recent evaluations suggest that the current program may help families to improve several health behaviors. The extensive community partnerships between healthcare systems, universities, county extensions, fitness facilities, and other entities has been critical to the sustainability and overall success of this program. Future family-based community programs should continue to focus on increasing participant's knowledge of recommended fruit and vegetable consumption and promoting families participating in physical activity together.

The integration of Healthy Families and similar programs into participants' normal healthcare may be critical to the long-term sustainability and success of family-based community intervention. Many medical providers struggle to offer reliable community resources to address their patients' obesity related health concerns and office visits are increasingly shorter, not allowing much time to fully facilitate health behavior change in families. Having a community referral such as Healthy Families available in a practices' EHR could allow case workers, nurse navigators and others, an easy and quick referral. However, more research is needed on whether referral through EHR results in improved completion rates and better health outcomes. Additionally when community programs provide clinics with information regarding patients' participation, progress in weight and physical activity outcomes as well as family goals, this can provide key information for follow up on a patients' progress outside of their office visit. This referral could also be utilized as a conversation starter in a motivational interviewing session to establish and align goals quickly and effectively in a short patient visit. Research is needed to

examine the effectiveness of follow-up care/conversations after taking part in a family-based community intervention as well as general long-term follow-up to see if these changes were maintained.

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Table 1. Overview of Healthy Families

Lesson Objectives	Model/Theory Components*	Example Activity**
Education • Nutrition • Meal planning • Meal budgeting • Family physical activity • Behavioral health	TTM : Consciousness raising, self-reevaluation; SCT – Outcome expectations, Observational learning	• Families learned about the consequences of energy imbalances (consciousness raising). • Families took part in a grocery store tour where they learned about affordable meal choices and how to shop for healthy foods on a budget with the nutrition lead (observational learning).
Barrier Resolution	TTM: Counterconditioning, Stimulus control; SCT – Facilitation	• After discussion of emotional eating triggers, families discussed their own triggers and identified substitutes for these barriers (stimulus control, facilitation).
Social Support	TTM: Environmental reevaluation, Helping relationships; SCT – Self-regulation	• Families learned about the role of support for successful behavior change and practiced role modeling supportive techniques (helping relationships).
Goal Setting	TTM: Contingency management, Self-liberation; SCT – Self-	• Families learned about SMART (Specific, Measurable, Achievable, Realistic, Time-Oriented) goal setting and set weekly family goals with help from the behavioral

	regulation, Incentive motivation	health lead (self-regulation, incentive motivation).

*TTM=Transtheoretical Model, SCT=Social Cognitive Theory

**The application activities within each area and lesson were intended to increase self-efficacy, a component of both TTM and SCT, through mastery experience, social modeling, and verbal persuasion.

Table 2. Demographics

	Child		Parent(s)	
	n	%	n	%
Age	135		170	
Mean	10.4		38.5	
Ethnicity	119			
Hispanic/Latino		50.4%		
Non-Hispanic/Latino		49.6%		
Race	119			
American Indian/Alaskan Native		3.4%		
Black/African American		17.6%		
White		66.4%		
Other		12.6%		
Gender	66		175	
Female		55.7%		76.6%
Male		44.3%		23.4%
BMI Classification*	112		161	
Normal		5.3%		8.1%
Overweight		13.4%		23.0%
Obese		81.3%		68.9%

*BMI Classification

For children: Normal=5th-<85th percentile; Overweight=85th-<95th percentile; Obese=≥95th percentile.

For adults: Normal=18.5-24.9; Overweight=25-29.9; Obese=>30

Table 3. Attendance

		Classes Attended						
Site	Sessions Offered	0	1 -- 2	3--5	6--8	Total	Average Enrolled*	% Completed**
1	4	5	5	7	9	26	7	34.60%
2	5	3	13	3	25	44	9	56.8%
3	3	0	0	6	12	18	6	66.7%
4	2	1	5	3	6	15	8	40.0%
5	4	4	4	6	18	32	8	54.8%
Total		13	27	25	69	135		51.5%

*Indicates the average number of families enrolled each session

**Completion was classified as attending 6 or more classes

Table 4. Knowledge Percentage Correct

	n	p-value	Pre	Post
Meal planning and budgeting questions			M	M
Name 2 affordable ways to purchase fruits and vegetables	42	0.002	61.9*	83.3*
Healthier eating questions				
Name 1 food you could choose instead as an alternative to a high sugar food.	47	0.125	63.8	74.5
Name 1 food you could choose instead of a higher fat food.	40	0.004	72.5	77.5
How many servings of fruits and vegetables should you eat per day?	48	1	27.1	25.0
What types of food groups should be on your plate at every meal?	50	0.008	10.0*	42.0*
What should be the biggest food group on your plate?	48	0.012	45.8*	68.8*
What should be the smallest food group on your plate?	44	0.001	2.3*	22.7*
Physical activity questions				
How many minutes of physical activity should kids get per week?	45	0.143	40.0%†	57.8%†
How many minutes of physical activity should adults get per week?	42	0.002	7.1%*	31.0%*

General note:

*Note: Statistically significant, p<.05

†Note: Statistically significant at the trend level, p<.10

Table 5. Self-efficacy Percentage Confidence

	n	p-value	Pre M	Post M
Meal planning and budgeting questions				
How confident are you that your family can make a weekly family menu?	64	0.002	68.1 (25.1)*	77.8 (21.6)*
How confident are you that your family can make a weekly food budget?	62	<.0001	71.5 (24.9)*	85.5(15.7)*
Healthier eating questions				
How confident are you that your family can make healthy choices regarding nutrition?	64	<.0001	65.6 (20.9)*	82.3 (16.0)*
How confident is your family that it can purchase healthy foods?	56	<.0001	68.8 (22.2)*	85.7 (14.6)*

How confident is your family that it can prepare healthy foods?	61	<.0001	71.8 (20.6)*	86.0 (14.8)*
Physical activity questions				
How confident are you that your family can make healthy choices regarding physical activity?	64	<.0001	67.0 (20.4)*	82.8 (15.8)*

General note:

*Note: Statistically significant, p<.05

†Note: Statistically significant at the trend level, p<.10

Table 6. Nutritional and physical activity behaviors

	Child				Parent A				Parent B			
Healthy eating habits questions	n	p-value	Pre	Post	n	p-value	Pre	Post	n	p-value	Pre	Post
Breakfast days/week	50	<.0001	5.4 (2.3)*	6.7 (1.5)*	45	<.0001	4.4 (2.6)*	6.4(1.3)*	13	0.064	4.9 (.7)†	6.3 (.3)†
Fruit cups/day	41	0.093	1.2 (.9)†	1.6 (1.0)†	41	0.292	1.3 (1.2)	1.6 (1.0)	11	0.044	.8 (.1)*	1.9 (.2)*
Vegetables cups/day	40	0.094	1.2 (1.3)†	1.1 (1.0)†	40	0.81	1.7 (1.5)	1.3 (1.3)	10	0.115	2.1 (.2)	1.7 (.2)
High fat or Sugary foods/day	52	<.001	1.6 (1.3)*	1.7 (1.1)*	51	0.008	1.3 (1.3)*	.8 (.9)*	14	0.004	1.2 (1.4)*	.7 (1.0)*
Sugar-Sweetened drinks/day	54	<.0001	1.2 (1.3)*	.4 (.6)*	54	<.0001	1.0 (1.2)*	.4 (1.3)*	14	0.133	1.2 (.7)	0.4 (.5)
Eating out days/week	55	0.053	1.8 (2.2)†	1.5 (1.6)†	53	0.01	2.0 (1.9)*	1.3 (1.3)*	14	0.528	2.2 (2.1)	1.5 (1.0)

Physical activity questions												
Pedometer – Average steps/day	29	0.346	5352 (2114.1)	6020 (3172.3)	29	0.258	6873 (3142.7)	5773 (2573.4)	8	0.162	9332 (5789.3)	4952 (3256.2)
Low to Moderate Intensity – Minutes/week	48	0.027	227 (280.2)*	419 (756.2)*	48	0.18	257 (403.1)	416 (1110.3)	19	0.582	562 (1010.3)	744 (1110.3)
Vigorous Intensity – Minutes/week	39	0.051	105 (208.0)†	159 (127.2)†	41	0.007	45 (81.0)*	101 (96.7)*	12	0.296	15 (155.2)	778 (2143.0)

General note:

*Note: Statistically significant, p<.05

†Note: Statistically significant at the trend level, p<.10

Table 7. Lessons Learned

Topic	Lesson Learned
Recruitment	• Offer the program in languages other than English. • Consider class size. For most sites, 20-25 participants was a manageable size for discussion and family social support. • Offer the program to employees as part of the organization's wellness program. Employees who find success with the program are more likely to refer patients to the program. • Integrate referrals into the electronic medical record and internal marketing to patient care coordinators, nurse case managers, physicians, and staff to increase likelihood of referrals and physician follow up when facilitated at Federally Qualified Health Centers, clinics, or community health centers. • Offer an "Open House" event where potential participants are invited to get to know the staff, participate in a sample physical activity, and try a sample snack.
Organization Implementation	• Identify and train champions high in the organization (CEO, Medical Director, etc.) about the program to ensure staff are supported. • Provide consistent onboarding of new staff. Consider utilizing online trainings to reduce scheduling barriers. • Work with community partners and/or community coalitions to leverage resources. Partner organizations can also be continued resources for families once the program is completed. • Encourage hospitals and clinics to use participation as a point of discussion of healthy behaviors at well-child visits to support families in making changes.
Curriculum	• Provide additional resources (including apps) to support families after the program is complete.
Nutrition	• Make weekly reminder calls to families to confirm participant count at each class to ensure good stewardship of resources and reduce food waste. • Provide samples of a variety of fruits and vegetables for families to try at class.

	• Discuss health benefits of sample snack every week.
Physical activity	• Facilitate activities outdoors and/or use materials found outside- sticks, rocks, leaves, etc. as families reported enjoying fresh air, and being away from a desk. • Consider activities that are easily adaptable for all ages/levels such as "Green Fitness" which combines recycled materials (free equipment that can be replaced for free if it breaks) with physical activities. This helps kids to develop creativity by playing multiple games with the same equipment and make up new rules to old games.
Perceived barriers to preparing healthy foods	• Seek additional opportunities to build knowledge and skills related to healthy cooking, such as national programs like Cooking Matters®, after the program has ended. • Respect cultural diversity by encouraging and demonstrating ways to modify favorite foods to make them healthier. Also, tailor recipes to cultural/regional preferences. • Discuss strategies for acquiring affordable fruits and vegetables.
Evaluation	• Conduct post program follow up to determine if there are long-term health benefits. • Consider using mobile apps to help adults track steps as pedometer use was inconsistent.
Retention-Participants	• Attempt to schedule the session for 8 weeks in a row rather than a session that includes a holiday which increased dropout rates. • Explain to families via phone a week prior to participation what their commitment will be to increase their investment in the program as often transportation challenges and shift working increased missed sessions and dropout rates. • Send reminder postcards prior to session starting, and weekly reminder calls.
Retention- Staff	• Hire qualified staff who are enthusiastic, organized, and supportive of the struggles of families in adopting a healthy behavior. An attitude of helping families "do for themselves" rather than "doing for families" is helpful and complimentary to curriculum and resources provided. • Engage a reliable student/intern to manage small details of the program and provide children in the program another positive role model.

	• Conduct weekly planning/debrief meetings (10-15 minutes) to plan and discuss lessons learned.