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STRENGTHENING SOCIAL AND  
EMOTIONAL HEALTH

## Greater Rochester Healthy Child Care 2010 Final Report

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## **GREATER ROCHESTER HEALTHY CHILD CARE 2010**

### **FINAL REPORT**

**MAY 13, 2011**

#### **INTRODUCTION.**

Children's Institute, Inc. (CI) in partnership with Child Care Council, Inc. (CCC) Rochester Childfirst Network (RCN), and the Department of Pediatrics at Golisano Children's Hospital at Strong (GCHaS), developed a curriculum-based program to be delivered in early child care settings. The program and accompanying evaluation were fully supported by funding from the Greater Rochester Health Foundation (GRHF) from September, 2007 through December 31, 2010. This three-year effort was directed toward addressing the ever increasing rates of overweight and obesity observed in children and adolescents, and was part of the GRHF 10-year strategic plan to decrease obesity and resultant negative health outcomes in the Rochester area.

Significant attention has been given to the phenomenon of childhood overweight and obesity, resulting in many programs attempting to prevent or treat this problem. Most of the programs have not been systematically evaluated to determine their efficacy. In the request for applications released by GRHF, it was specified that projects that incorporate an evidence-based approach would be considered. In response, CI, CCC, RCN, and GCHaS reviewed numerous interventions and curricula to identify one or more with supporting outcome data. Two curricula were selected, one with existing evidence of effectiveness and one that has been offered through the New York State Department of Health for several years. Modified versions of these programs were described by the partnering agencies in their proposal to GRHF.

A systematic evaluation of the interventions was included as part of the program implementation. The evaluation would afford an opportunity to determine the extent to which child care providers were able to assimilate new information and new practices into their daily activities and what, if any, impact this had on physical markers of overweight and obesity on children in their care.

#### **BACKGROUND.**

Children who are overweight are at risk for a number of negative health outcomes, including early development of Type 2 diabetes, asthma, sleep disorders, orthopedic problems, precocious puberty, depression and low self-esteem. In 2007 the Greater Rochester Health Foundation issued a community-wide strategic plan identifying the problem of childhood obesity and the goal of reducing the prevalence of overweight and obesity in Monroe County among children ages 2-17. The plan was the product of the Childhood Overweight and Obesity Task Force established by the Foundation to address current trends in childhood morbidity and the adult health outcomes stemming from early overweight and obesity. Many studies have designated the acceleration of obesity as an epidemic facing children and youth. Changes in diet, exercise, and community environments are the most often cited factors leading to unhealthy lifestyles, resulting in higher Body Mass Index and lower levels of physical activity. In 1999, the rate of obesity was approximately 17% among 11- to 14-year-olds in Monroe County, and Head Start has estimated that about 40% of the children they serve are obese.

The objectives that were identified in the Request for Proposals released by the Greater Rochester Health Foundation in 2007 were to:

- increase children's moderate to vigorous physical activity to 60 minutes per day
- introduce 30% more fruits and vegetables to meals and snacks served to children or, if already meeting the objective of providing at least 5 servings of fruits and vegetables daily, to maintain this behavior
- offer only skim or 1% fat milk and reduced fat for other dairy foods, eliminating sweetened beverages that have no nutritional value
- raise child care providers' knowledge and understanding of nutrition, healthy eating, and the importance of physical activity
- increase parents' knowledge and understanding of nutrition, healthy eating, and the importance of physical activity
- reduce the incidence of childhood overweight and obesity in the community

To meet these objectives, the partnering agencies, Children's Institute, Child Care Council, Rochester Childfirst Network, and Golisano Children's Hospital at Strong, designed an intervention that used two curricula. One curriculum was modified for use at family child care sites and the other curriculum was enhanced for use at child care centers. Both were developed to meet the objectives defined by the Greater Rochester Health Foundation and would focus on children between the ages of 2 and 5 years and their child care providers.

#### **TARGET POPULATION.**

In response to a Request for Proposals released by the GRHF, the *Greater Rochester Healthy Child Care 2010 (GRHCC2010)* program was developed to target children in out-of-home care settings: child care centers, family child care, and group family child care homes. Targeted children were between 2 and 5 years old. Many of these children were already participating in programs with the Child and Adult Care Food Program (CACFP). The CACFP program is supported by funding from the U.S. Department of Agriculture (USDA) and is available to child care centers, family (home-based) and group family child care, as well as community adult day care, after school, and homeless shelter programs. CACFP sets food requirements and provides reimbursement and training in support of serving nutritious meals to children living in households that meet eligibility criteria based on low household income. CACFP participation was not a requirement for inclusion in the GRHCC2010 program, but a substantial proportion of child care providers in Monroe County are recipients of this subsidy. The GRHCC2010 intervention was intended to focus on child care providers serving lower income families who may not have access to other programs, thus they were more likely to receive CACFP for some, if not all, of the children they serve.

#### **DESCRIPTION OF THE INTERVENTION.**

The two programs developed for this intervention were: a) *Hip-Hop to Health Jr.* (used in family child care sites) and b) *Eat Well Play Hard-Enhanced* (introduced in centers). The collaborative group implementing these programs conducted a critical review of several interventions

suggested in the RFP, examining existing literature and available curricula. With regard to one of the more promising interventions, *Hip-Hop to Health Jr.*, we sought the guidance of Melinda Stolley, the author of the curriculum. The programs were selected because they were already in existence in some child care settings in this region, they represented culturally and developmentally appropriate approaches that have been tested, and/or they included tools and curricula that could be readily adapted for the groups being served by the project. The two curricula chosen were deemed the most likely to demonstrate the desired outcomes and lead to sustainable changes in child care sites.

The curricula were adapted for implementation for this project. *Hip-Hop to Health Jr.* (HHtoH) was initially developed and evaluated in Head Start child care centers. For the purpose of this initiative, a slightly modified version for use in family child care settings was proposed. Family child care is typically home-based care serving relatively low numbers of children. The number of children in care is dependent upon the number of adult caregivers and the ages of the children in care. The range is a maximum of 3-6 children per one caregiver. The other existing program, *Eat Well Play Hard* (EWP) was developed by nutritionists and has been offered in child care centers since 2006. Child care centers serve larger groups of children with group sizes ranging from about 15-24 children per 'classroom.' While EWP has not been systematically evaluated, it has been in widespread use throughout New York State. EWP is currently offered in 36 of 62 NYS counties, including Monroe County, where Rochester is located. This project proposed additions to the EWP curriculum to include two supplemental interventions: *Childhood Obesity Prevention Initiative* (COPI), which supports environmental changes in child care settings to promote healthy eating and physical activity, and *Team Nutrition*. *Team Nutrition* is a US Department of Agriculture Food and Nutrition Service program that provides training and support for food service, nutrition education for caregivers, and community support for healthy eating and physical activity. COPI and *Team Nutrition* were added to the core curriculum, resulting in *Eat Well Play Hard-Enhanced* (EPWP-E) for this project.

a) *Hip-Hop to Health Jr.* was developed and tested in an urban population. This curriculum was piloted for African-American and Latino preschool age children through Head Start programs in Chicago. It provides a tested and validated program that is readily modified to serve many of the children in the homes this project served. This program had positive outcomes. Specifically, children who received *Hip-Hop to Health Jr.* experienced a minimal rise in BMI over the two years of the study compared to a significant rise among the controls. Menu planning and support is a component of this program.

b) *Eat Well Play Hard* was developed by New York State Department of Health and is based on the *Nutrition and Physical Activity Self Assessment for Child Care* (NAP SACC) curriculum (<http://www.napsacc.org>). It is an 8-week curriculum that has been introduced to some child care centers in Monroe County. *Eat Well Play Hard*, through additional resources received from this initiative, was broadened in scope to include centers that are not currently eligible through state funds and incorporated other lessons as adjuncts to the existing EWP program. These enhancements are the *Childhood Obesity Prevention Initiative* (COPI) and *Team Nutrition Training*.

For both of the intervention programs, the first and last weeks of the intervention include collecting BMI data and physical activity measures using pedometer counts. The project staff spent 12-14 weeks per cycle delivering *Hip-Hop to Health Jr.* and 8-10 weeks per cycle delivering *Eat Well Play Hard-Enhanced* at the child care sites. Project staff were at the child care sites once per week during the day to provide intervention to the children and returned on selected evenings to provide training to either parents or program staff.

## **DESCRIPTION OF PROGRAMS.**

a) *Hip-Hop to Health Jr.* is a model previously tested by Fitzgibbon, et al. in Chicago Head Start centers. This intervention adapted *Hip-Hop to Health Jr.* to family and group family child care settings. The primary strategies are to increase dietary fiber, reduce dietary fats, and increase physical activity. *Hip-Hop to Health Jr.* has a parent component. Parents received weekly newsletters that reinforced the children's curriculum and gave 'homework' such as tracking their families' fruit and vegetable consumption for a week. This program was selected as a culturally competent and effective intervention. The author/developer of the *Hip-Hop to Health Jr.* curriculum provided training to project staff during the start-up of this initiative and continues to provide consultation as needed.

During the 14-week Hip-Hop to Health Jr. program, a different learning session was presented each week. Every class contained a lesson about a particular food group or other nutritional information. Stories were read to the children with healthy eating and physical activity as the central themes. The curriculum has an accompanying music CD with corresponding exercise activities that are part of every lesson. The curriculum specialist participates with the children, and the provider is encouraged to take part as well. Puppets representing various food groups were used to reinforce healthy eating. Providers received a complete copy of the program materials so that they could continue with the lessons after the program period ended.

b) *Eat Well Play Hard* is a New York State Department of Health initiative that is designed to help prevent obesity in early childhood and is targeted to children as young as two years. Strategies include increasing the consumption of fruits and vegetables, reducing consumed fat from dairy products, and promoting age-appropriate exercise for children. *Eat Well Play Hard* includes parent education and staff training as part of the initiative and the materials are available in Spanish. *Eat Well Play Hard-Enhanced* was selected for implementation in centers since it has already been successfully used in some centers, and because a statewide implementation of this curriculum in child care centers serving primarily low-income children is planned over the next five years, building sustainability into the proposed project. Half of the child care centers in Monroe County do not qualify for CACFP or the New York State Department of Health initiative and so do not receive any nutritional support. In order to reach the widest range of providers, this project targeted them as well as the CACFP eligible sites.

Children participating in the program received classes presented by a registered dietician, which imparted information about healthy eating and how to make better food choices. They are given opportunities to prepare simple snacks and to sample new foods, especially new fruits and vegetables. They also participate in games that incorporate moderate to vigorous physical activity. The curriculum was developed to be very accessible and developmentally appropriate.

Staff at participating centers received a significant amount of information about nutrition, food purchasing, meal preparation, and good mealtime practices, along with menu planning support. Centers received a “toolbox” containing cooking utensils and other kitchen tools. The program allows for flexibility so that the materials provided are tailored to the needs of the center.

### **STRENGTHS AND OPPORTUNITIES FOR IMPROVEMENT.**

Challenges to implementing the programs were recognized, addressed, and resolved by building upon existing strengths, and capitalizing on prior collaborative effort. For example, the curricula and materials were presented in a way that did not alienate the staff and providers whose support the children needed to develop healthy habits. Parent participation rates have been low despite the many ways project staff worked with providers to accommodate parent interests and needs. Project staff created inviting opportunities that met parents' needs, such as preparation of an evening meal with parents who could then take it home or eat with their children at the site. Both programs sought and respected input from parents at the outset in an effort to generate trust and improve participation. The programs offered activities specifically for center cooks, to explain the project and provide information. Both interventions provided menu-planning support for providers which could also be shared with parents. Family child care providers received cooking classes as part of their ongoing training activity. These classes instructed them on “inexpensive choices, cooking on weekends and freezing, and making it fast, easy, and healthy.” Cultural sensitivity in food and menu selection was essential during the project. Many methods were used to minimize parent and/or staff perception of this intervention as a negative judgment on their children and/or setting. These included consultation with community organizations and selecting programs that were developed using culturally competent principles.

*Greater Rochester Healthy Child Care 2010* was directed by a Coordinating Council, comprising representatives from each of the partner agencies (Child Care Council, Children's Institute, Rochester Childfirst Network, and Strong Department of Pediatrics.) Each partner sent a representative to regularly scheduled meetings. Critical to the success of this project was the collective experience and guidance of a community-wide advisory committee. The committee, comprising program participants, early childhood experts, medical professionals, and representatives from local foundations, met quarterly to review project materials and program progress, provide critiques of project implementation, help with sustainability efforts, and give guidance on the overall program.

The evaluation tools required timely attention by the providers and the staff. Ample time to complete the evaluation tools was built into the program schedules and the project staff gave the providers clear and relevant rationales for using the evaluation tools. The project included incentives to providers for compliance with completion of the intervention and to support their program with materials and resources to enhance sustainability efforts.

### **EVALUATION.**

Data were collected at two time points for all children: at baseline (*prior to the initiation of the project*) and at follow-up (*at the completion of the program for that site*). A subsample of

children who participated in Years 1 and 2 of the project were also measured at a longer follow-up time – approximately 12 months following completion of the program. This report summarizes the three year findings on the impact of the program through measuring changes in eating and activity behaviors, and health status markers, such as body mass index (BMI) and physical activity, and the impact on child care provider and parent behaviors, knowledge and understanding of nutrition and the importance of providing opportunities for physical activity.

BMI was computed from height and weight measurements provided by trained project staff. Child care centers were furnished with a scale and used a standardized “book and tape measure” approach to measure weight and height during the program. Family based programs used the book and tape measure as well, but had weight measured using portable scales brought by project staff. Physical activity was measured using pedometers worn by the children and monitored by project staff. *GRHCC2010* staff placed pedometers on children and counted the readings for that day. Measures were taken at baseline and then at the completion of the program. All age-eligible (2-5 years old) children receiving care at the participating sites received the intervention.

All of the data collection was done by the curriculum specialists or other program staff who received training on how to obtain accurate weight and height measurements. The pediatrician collaborating on this project reviewed proper weighing and measuring techniques and presented the processes used to resolve inconsistencies in measurement. This was done to reduce the possibility of error and improve data accuracy, since these measures inform one of the primary outcomes.

Physical activity was measured by the number of steps (counts) recorded by pedometers. The pedometers were affixed with unique ID numbers so that each child would wear the same unit at post-intervention measurement as was worn at the pre-intervention assessment. The intention was to minimize errors associated with differences in pedometer calibration and to improve the accuracy of the readings. Project staff was responsible for placing the pedometers on the children, recording the interval of time the pedometer was in use, and documenting the number of steps.

Changes in provider knowledge and understanding of the importance of nutrition, healthy eating habits, and physical activity was measured with pre- post- provider questionnaires that accompanied the Hip-Hop to Health Jr. curriculum. Additional qualitative indicators of provider knowledge and attitudes were reported by the registered dietitians and curriculum specialists in field notes and during regular periodic debriefing. Providers also completed an anonymous participant evaluation survey at the end or shortly following the program cycle at their sites. This measure was completed by Hip-Hop to participants and assessed the acceptability and feasibility of the curriculum as well as changes that may have resulted from their participation and their future intentions to deliver the lessons.

Parent outcomes were not systematically measured by the evaluation. Providers and project staff received numerous anecdotal accounts from parents about the messages they received from their children. These were collected and reviewed for constructs and recurring themes.



Menus were collected from all participating child care centers and family child care providers in an attempt to document changes to meal and snack offerings. These were reviewed by the evaluation team and a graduate student intern.

### **DATA ANALYSIS.**

All data were sent to Children's Institute, where they were processed and archived. Data processing involved tracking and reporting on data received, and data entry and management. Preliminary analyses of frequency distributions were conducted, followed by detailed bi-variate and multi-variate analyses using appropriate statistical software (SPSS, SAS, and other software where indicated). Children's Institute staff complied with the Institutional Review Board of the University of Rochester to ensure that the research and evaluation design were ethical and protected the rights and privacy of the staff, children and families involved.

An algorithm provided by the Centers for Disease Control and Prevention (CDC) was used to compute body mass index (BMI) from the height and weight measurements. The algorithm, available as a SAS program, also computes BMI z-score, correcting for age and sex, and BMI percentiles corrected for age and sex. The use of BMI z-score allows noting the extent to which a given BMI varies from the mean BMI for specified age-sex group. The CDC values are based on the most recently tabulated population data, and reflect the normative data observed in the United States.

The data generated by this project have been presented in preliminary form to several audiences, including the Greater Rochester Health Foundation and the Advisory Council to the Greater Rochester Health Child Care 2010 project. An abstract describing preliminary findings was submitted to the American Heart Association for presentation at an academic conference. Reports will be publically available if desired.

### **RESULTS.**

The number of children who received the program during each year of funding depended on the total number of children served by the child care site. In Year 1, 753 children between the ages of two and five received one of the two curricula. There were 627 children participating in Year 2 and 573 children in Year 3. Some children who were outside the targeted age-range also received the program, directly or indirectly, simply because of the way the child care sites were structured. Data were not collected from these children and they are not included in the evaluation. Other children, for example children whose parents did not provide a signed permission form, received the program but were not included in the evaluation. We did not collect information on the number of children that were in the excluded groups, as they were not eligible for the study.

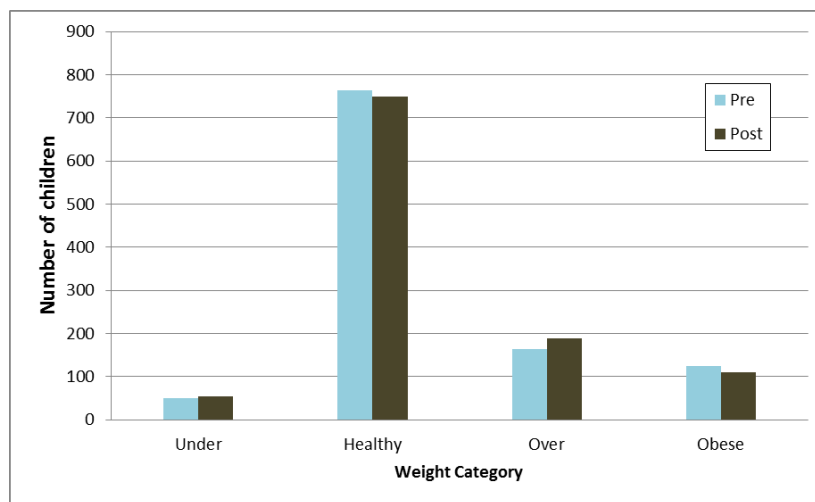
The program was provided in 26 centers in Year 1, 24 centers in Year 2, and 30 centers in Year 3, for a total of 80 child care centers served. For family child care sites, the corresponding number of sites was 92 in Year 1, 96 in Year 2, and 94 in Year 3, totaling 282 family child care sites. Over the three year period, the curricula were delivered to 363 sites without overlapping or repeating the program in any site.

The demographic characteristics of the children were comparable to the US census data for Rochester and nearby suburbs. During each of the three years, the racial/ethnic categories for children receiving the program were: <1% Asian, 31% Black/African-American, 48% White/Caucasian, 10% Other/Mixed race, and 11% Unknown/Not reported. Approximately 11% of children were Hispanic/Latino. The average age for the participating children was 3.8 years old, with a standard deviation of 0.9. Slightly more than half (52%) of the children were male. Because these characteristics did not vary from year to year, and there were no systematic differences among the sites, the remaining results will be for the total number of children served (n=1882) over the three year period, with 1190 in family child care and 692 in center-based care.

We tested the hypothesis that providing training to child care providers to deliver healthy eating and exercise curriculum to 2-to 5-year-old children will reduce BMI or prevent BMI increases that indicate overweight and obesity. Children had height and weight measured prior to the intervention and at post-intervention follow up. Physical activity was measured with pedometers. Body mass index (BMI) was computed and compared (pre vs. post), as was number of steps. The change in proportion of children classified as normal, overweight or obese was also noted. Paired t-tests were used to compare within subject pre- and post-intervention measures. A subset of children (n=118) who participated in Years 1 or 2 of the program were measured at a 12-month follow-up. Those findings will be reported separately.

Using Centers for Disease Control and Prevention classification standards to identify children as underweight, healthy weight, overweight, or obese, there were no statistically significant changes from pre- to post-intervention. At pre 69% of children were classified as ‘healthy’ weight vs. 68% at post. At pre, 15% met the classification standard of overweight and 11% were classified as obese. These rates were 17% and 10% post-participation respectively. The pre- and post-program BMI percentile classifications can be seen in Figure 1.

Figure 1. BMI Percentile Categories Pre- and Post-Intervention



The participating children were predictably slightly taller and heavier at post as part of expected development. Their uncomputed height increased from 101.4 cm at pre to 103.1 cm at post.

This is a statistically significant increase ( $t=-20.4$ ,  $p<0.001$ ). Weight was statistically significantly greater from 16.9 kg pre to 17.2 kg post ( $t=-17.6$ ,  $p<0.001$ ). For computed BMI, there was a small, but statistically significant decrease from pre (16.4) to post (16.3), with  $t=3.1$  and  $p=0.002$ . The difference from pre- to post- for BMI z-score was not statistically significant. BMI z-score at pre was 0.33 and at post was 0.28.

The evaluators and partners were interested in how each of the two curricula performed. While they cannot be directly compared, it was possible to examine pre- and post- changes for the curricula separately. Thus, when restricting the analysis to those children who received Hip-Hop to Health in family child care, it is noted that height and weight increase, and BMI and BMI z-score decrease. The children receiving Eat Well Play Hard-Enhanced in center-based child care showed similar increases in height and weight, but showed no change in BMI or BMI z-scores. These data are summarized in Table 1.

Table 1. Height, Weight, BMI and BMI z-score Within Curriculum at Pre and Post.

Measure	Hip-Hop to Health Jr.				Eat Well Play Hard-Enhanced			
	Pre	Post	t	p-value	Pre	Post	t	p-value
Height (cm)	98.6	100.74	-15.6	<0.001	105.1	106.2	-17.9	<0.001
Weight (kg)	16.1	16.6	-12.8	<0.001	17.9	18.3	-13.3	<0.001
BMI	16.6	16.4	3.2	0.001	16.2	16.2	0.4	ns
BMI z-score	0.32	0.22	2.0	0.05	0.34	0.36	-0.5	ns

The second hypothesis to be tested was that children would increase their levels of physical activity following a program that instructed both the child care providers and the children on the importance of exercise and provided strategies for incorporating physical activity into their daily routines. For this evaluation, physical activity was measured using pedometers on the children and calculating the number of steps taken per minute based on the interval the pedometers were worn and the total number of steps counted. As with the height and weight measurement, this was done at two time points, pre-intervention and post-intervention. Overall, children did not significantly increase the number of steps per minute (16.8 to 17.5 steps per minute,  $t=-1.4$ ,  $p$  is not statistically significant). This was also true when data from the children receiving EWPH-E were analyzed separately, with 17.1 steps per minute at pre and 16.5 at post. However, when pre to post data from children who received HHtoH were compared, it was noted that the number of steps per minute increased from 16.7 to 17.9, with  $t=-2.0$ ,  $p<0.05$ , yielding a small but statistically significant difference.

Other possible outcomes from the GRHCC2010 project included increasing child care providers’ knowledge and understanding of the importance of both healthy eating and physical activity. Providers were asked to complete a brief survey at pre and post that was designed to measure their knowledge of nutrition and healthy behaviors. The survey was a component of the HHtoH curriculum, so only the family child care providers were included. Completion of the surveys was not monitored closely. As a result, the response rate for pre- and post- surveys was low ( $n=89$  of 282) resulting in inadequate power to detect statistically significant changes. Table 2 summarizes the responses.

Table 2. Child Care Provider Knowledge of Healthy Eating and Physical Activity (n=89)

Percent correctly identifying “slow” or “go” foods

Food Choice	Pre (%)	Post (%)
Potato chips (slow)	99	100
Apple (go)	99	100
Baked chicken (go)	95	99
Pretzels (go)	52	58
Carrots (go)	99	100
Chocolate cake (slow)	99	99
Fried fish (slow)	86	91
Green peppers (go)	98	96
Kool-Aid (slow)	97	99

Percent correctly answering additional nutrition and activity questions

Question topic	Pre (%)	Post (%)
Benefit of whole grains	69	69
Number of fruit/vegetable servings per day	37	68
Healthiest milk for age 2+	67	82
Cooking method that adds fat	88	97
Benefit of exercise	63	74
Daily TV recommendation	50	54

Providers were asked to complete a participant evaluation survey at the completion of the 14-week Hip-Hop to Health Jr. cycle. Surveys were administered from one week to approximately 3 months after the final session by the curriculum specialist. The purpose of this survey was to assess how the curriculum was received by the providers, changes they may have made in food preparation, in meals and snacks offered, and to exercise and physical activity at their sites. Questions about the curriculum materials and the providers’ intentions to continue using them in the future were included.

Responses to the participant evaluation survey were received from 137 of the 282 family child care providers (49%). Most of the responses were based on a simple 3-point scale: Yes, Maybe, and No. These were collected post-program participation. Provider responses are summarized in Table 3.

Table 3. Provider Responses to Participant Evaluation Survey (n=139)

Item	%	Yes
Weekly on-site lesson schedule worked well for my program	100	
Curriculum specialist related well with children	100	
Curriculum specialist related well with provider/assistants	98	
Curriculum specialist responded in timely manner to questions/concerns	98	
Hip-Hop program length (14-weeks) was appropriate	79	15% - “Too short” 6% - “Too long”
Nutrition lessons were understandable to children	85	
Children learned and retained nutrition information	88	
Nutrition lessons encouraged healthier eating habits	85	
Provider has incorporated good nutrition habits into program	94	
Program changes: switched to 1% or skim milk	53	
switched to lower sugar cereal	47	
bakes more and fries less	48	
switched to whole grain breads	44	
uses less fat (oil, butter)	62	
serves greater variety of fruits and vegetables	66	
Physical activity lessons were understandable to children	91	
Children enjoyed exercise portion of curriculum	96	
Children choose physical activity over screen time more often	82	
Provider enjoyed participating in exercise portions	93	
Will use Hip-Hop curriculum book in future	88	
Plan to use Hip-Hop puppets in future	96	
Will continue to use Hip-Hop provided children’s books	95	
Plan to use ‘Go and Grow,’ food pictures, felt pyramid in future	93	
Will continue to use music CDs for daily physical activity	96	

Provider feedback to both Hip-Hop to Health Jr. and Eat Well Play Hard-Enhanced was overwhelmingly positive. Several providers reported that their exercise music CDs had become worn through excessive use. Providers asked the EWPH-E dieticians for additional sessions to address meal planning, strategies to include parents, and other nutrition issues.

Parents with children who received either of the curricula brought comments and observations to the attention of the child care providers and/or the dieticians and curriculum specialists. These were unsolicited and not systematically documented, however comments included themes such as: children requesting specific fruit or vegetables as snacks, children correctly identifying a food’s category (protein, fat, sweet, etc.), children reluctant to eat fast food or other foods perceived as less healthy or slow, and children identifying and requesting low-fat milk when

accompanying parent at the grocery store. There was limited parent participation in the cooking and other events provided as part of the program, but the parents who did attend indicated that the information was helpful and would guide food choices and preparation in their households.

Analysis of the menus proved less helpful than hoped. There was a lack of specificity (e.g. "milk" would be noted, but not fat content such as "1% milk" or "skim milk"). It was unclear from the menus what quantities of food the children received, so portions could not be determined. Any changes that occurred are captured either through provider self-report on the participant survey, or through observations by the dietitians and curriculum specialists. It was consistently noted that providers had almost universally stopped serving sweetened non-nutritional beverages and limited the amount of fruit juice served. Nearly all were serving significantly more fresh fruit and vegetables. Many reported skepticism that the children in their care would accept fruits and vegetables as snacks and at meals and were surprised that these could be easily introduced in creative ways.

A question that persisted throughout the project was how sustainable any positive outcomes would be over time. To address this, a 12-month follow-up was added to the program evaluation during the course of the project. At the time of the follow-up, children from the first year of the project and some children from Year 2 were eligible, having completed the program cycle approximately 12 months previously.

At the time of 12-month follow-up, 708 children in Year 1 of the program and 601 in Year 2 had received the interventions. In both years, slightly more than half (54 and 55% respectively) were male. There were no statistically significant differences between the Year 1 and Year 2 cohorts so data were pooled for the analyses. The 12-month follow-up was completed for all children who participated in Year 1 and only for those children from the Year 2 cohort for whom a 12-month period following the program had elapsed.

For the follow-up sample, pre-intervention, 23% of the children were either overweight or obese. These percentages were slightly higher for the children receiving care at family/group family sites (25%) than those receiving center-based child care (19%). Overall, the percentage of children classified as overweight or obese did not show a statistically significant change from pre- to post-intervention, but both groups increased the percentage of overweight and obese children by one percentage point (26% vs. 20%, respectively). It is noteworthy that the pre-post-measurements were made at the end of 14 weeks for the children in family care receiving HHtoH and at the end of 8 weeks for the children in center-based care, who received EWPH-E.

Every reasonable effort was made to locate and measure the Year 1 and Year 2 participants at 12 months following receipt of the intervention. In many instances, the children had left the child care setting or had aged out to school. Curriculum specialists made several visits to sites in an attempt to capture children who had been absent. Even with repeated attempts, a relatively small number of the cohort was available for measurement (n=181). For the subsample that were measured at 12-months, the percentage of children overweight or obese was 32% overall. Children at family child care sites (HHtoH) showed a smaller increase from pre- to follow-up (4%) than those in family child care sites (7%). The calculated BMI z-scores showed a similar pattern. The mean overall BMI z-score at pre was 0.28 (SD=0.98). For the children in family

child care, BMI z-score at pre was 0.35 (0.98) and for the children in center-based care mean pre BMI z-score was 0.20 (0.98). This starting point (pre) was statistically significantly higher for the family vs. the center group ( $t=2.3$ ,  $p=0.02$ ). Mean BMI z-score at post was 0.29 (1.00) for the pooled group, an increase of 0.01 points. For children receiving HHtoH in family care settings, the post BMI z-score was 0.30, a decrease of 0.05 points. Children who received EWPH-E at centers had a mean BMI z-score of 0.27 (0.95) at their post measurement, representing an increase of 0.07 points. Mean BMI z-score at 12-months was 0.61 (0.92) for the pooled group, an increase of 0.33 points. For children receiving HHtoH in family care settings, the 12-month follow-up BMI z-score increased to 0.49 (0.88), or 0.14 points from pre- to 12-months. Children who participated in EWPH-E at centers had a mean BMI z-score of 0.76 (0.96) at 12-month follow-up, representing an increase of 0.56 points. The differences between the 2 intervention groups was statistically significant at pre- and at post- ( $p<0.05$ ), but not at 12-month follow-up ( $p=.09$ ). However, it is noted that the children in family-based care (HHtoH) demonstrated a smaller increase in BMI z-score than the children in center-based care (EWPH-E) at the culmination of twelve months.

A measure of physical activity (steps/minute recorded by pedometer) increased from pre- to post- to follow-up. Overall, mean values increased from 13.9 (pre) to 14.3 (post), to 15.5 (12-month). However, when comparing the curricula groups, the increase in physical activity was present only for the children participating in HHtoH: 14.4 to 14.4 to 20.6 versus the EWPH-E group: 13.8 to 14.3 to 12.6. The difference between the 2 groups was significant at 12-month follow-up ( $F=10.1$ ,  $p=0.002$ ).

All participating programs reported increases in both fruit and vegetable offerings at all snacks and meals at the 12-month follow-up. All sites were serving low-fat or non-fat dairy exclusively, and had eliminated all sweetened non-nutritious beverages.

## CONCLUSIONS.

This project demonstrates that child care providers and the children in their care will readily accept a short-term intervention addressing nutrition, healthy eating, and physical activity. There were measurable changes, particularly among children receiving Hip-Hop to Health, in BMI and the measure of physical activity that was used. Child care providers reported making changes in their practices as a result of their participation in this project. Parents and their children have opened dialogue around food choices and healthy behaviors at home. Some of these changes may persist over time.

Both curricula (HHtoH and EWPH-E) are brief interventions that provide lessons to the children in the targeted age range (2-5 years) and to their caregivers. The lessons are well received and readily incorporated into the routines at child care sites. Children appear to engage in the lessons, gain relevant information, and retain the messages about healthy eating, nutrition, and physical activity.

The significant changes in behaviors were seen for the children who received Hip-Hop to Health Jr. in family care settings. While it is impossible to compare the two curricula, since HHtoH was exclusively used in family care and EWPH-E was only used in center-based care, the apparent

success of HHtoH makes it an attractive option. Aspects of the program add to its potential usefulness for the future. It is well-received by both providers and children and it can be effectively implemented with paraprofessionals.

All of the participating child care providers welcomed visits by the dietician or curriculum specialist and the teaching materials they received. Professional relationships with providers are essential to positive implementation. Many providers reported changes in their meal, snack, and beverage offerings as a result of their participation in the program. Providers have adopted many of the exercise and physical activity strategies promoted by the curricula. The information and skills to impart lessons about nutrition and exercise are needed in the early childhood field. Both curricula are intended to adequately prepare child care providers to deliver the lessons independently to subsequent cohorts of children. The findings suggest some progress toward that goal.

Through this project and program evaluation, three years of information is available for this part of the Greater Rochester Health Foundation's 10-year initiative. The acceptance of the curricula by child care providers, children and their parents suggests that programs like this can be effectively implemented community-wide. While parents received healthy eating and exercise information from their children and from the child care providers, further efforts are warranted to increase parent engagement and participation.