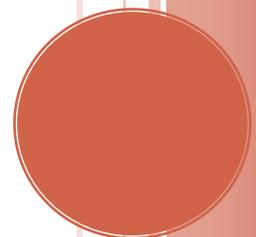


OKLAHOMA CATCH KIDS CLUB

2011-2012 Analysis

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Oklahoma CATCH Kids Club

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The Coordinated Approach to Child Health (CATCH) Kids Club is an after-school-based curriculum designed to teach children about healthy food choices and physical activity habits. The ultimate goal is for children to reduce their risk of obesity and improve their overall health by increasing fruit and vegetable consumption and being more physically active while fostering healthy environments in which they learn and play.

The CATCH Kids Club (CKC) program has been part of numerous Oklahoma after-school programs since Fall 2007. Participants have experienced improvements in physical activity participation; survey scores regarding food knowledge, behavior, preference, and self-efficacy; and body mass index (BMI) in the first four years of the program. Evaluation of the CKC program continues into its fifth year.

The purpose of this report is to assess the effectiveness of Year 5 CKC programs in improving physical activity and food knowledge and behaviors among 3rd-5th grade children enrolled in the program. A second purpose is to assess if changes in the children's BMI occurred while in the program. Student surveys were conducted both pre- and post- program intervention, and these surveys assessed three main areas: knowledge of nutrition and physical activity concepts; current physical activity and nutrition behaviors; and attitudes/self-efficacy toward nutrition and physical activity.

Demographics

A total of 302 students in grades 3 through 5 completed the CKC survey in Fall 2011, and 242 students completed the survey in Spring 2012. The majority of students were female, White, and in 3rd grade for both time points. The distribution of students by grade and sex was similar across the two time points, though many more students classified themselves as "other" race/ethnicity and fewer classified themselves as Black and Hispanic in the fall compared to the spring. Demographics of the students are shown in Table 1.

Table 1. Demographics of Students Who Completed the Survey

Grade	Fall 2011		Spring 2012	
	n	percent	n	percent
3 rd	120	39.7	90	37.2
4 th	105	34.8	80	33.1
5 th	77	25.5	72	29.8
Age (years)				
≤ 8	78	26.1	28	11.2
9	119	39.8	78	33.2
10	72	24.1	69	32.7
≥ 11	30	10.0	66	22.9
Sex				
Male	136	45.6	114	47.1
Female	162	54.4	128	52.9
Race/Ethnicity				
White	130	43.6	110	45.5
Black	28	9.4	37	15.3
Hispanic	28	9.4	32	13.2
American Indian	41	13.8	25	10.3
Other	99	33.2	38	15.7

Note: Missing data include n=3 for Fall and n=1 for Spring age; n=4 for Fall sex; n=4 for Fall race/ethnicity.

SURVEY RESULTS

Behaviors

Results for the behavior questions are presented in Table 2. In the Fall, 13% of children were eating 5 or more servings of fruits and vegetables daily, and almost 80% of children indicated eating breakfast every day. Forty-five percent of children spent fewer than 3 hours weekly on the computer, watching TV, or playing video games, and almost 76% of children engaged in at least 20 minutes of physical activity on the previous day.

More males than females indicated eating 5 or more servings of fruits and vegetables daily at both time points, though these gender differences were not significant. The only significant difference in behaviors between males and females was that a larger percentage of females than males spent fewer than 3 hours per week on the computer, watching TV, or playing video games in the Fall.

From Fall to Spring, there were small improvements in some behaviors and slight deterioration of other behaviors (Table 2). For example, 22.4% of male students ate no fruits and vegetables in the Fall, and this percentage declined to 12.5% in the Spring (data not shown). Also, 17.2% of males indicated eating chips or French fries every day in Fall, and this percentage declined to 9.1% in Spring (data not shown). These changes were not statistically significant, however. Only two differences in behaviors were statistically significant; more students engaged in 20 min of physical activity on the previous day, and the composite food behavior score worsened among male students.

Table 2. Percentage of Children Engaging in Specific Healthy Behaviors.

	Total (%)		Males (%)		Females (%)	
	Fall	Spring	Fall	Spring	Fall	Spring
Food Behavior						
Eat 5 servings of fruits/veg per day	13.0	14.9	16.4	17.9	10.6	12.2
Drink 7 or more glasses of water per day	34.2	33.2	34.1	30.6	34.6	35.5
Ate no sweets yesterday	40.0	36.2	40.2	39.6	40.0	33.1
Ate beans 1 or more times yesterday	25.7	24.1	28.8	21.2	22.5	26.8
Eat chips/fries on some or no days	76.4	79.2	70.3	75.5	82.1	82.5
Eat breakfast every day	79.4	75.5	82.0	72.1	78.1	78.6
Eat wheat bread (vs white bread)	51.3	51.5	48.0	57.3	53.1	46.4
Eat grilled chicken sandwich (vs burger)	43.5	49.6	45.2	46.3	42.6	52.4
Drink low fat or skim milk	37.5	42.0	36.8	45.9	38.4	38.5
Eat chicken without skin	36.5	35.9	35.7	33.9	36.2	37.7
Composite score (≥ 7 of 9 items)	4.3	3.7	6.7†	1.8†	2.5	5.5
Physical Activity Behavior						
< 3 hours of screen time per week	45.1	41.6	35.9‡	36.3	53.2‡	46.4
Active for 20 minutes yesterday	75.9†	83.0†	72.7	85.5	72.7	80.8
Composite score (2 of 2 items)	32.9	35.2	29.3	30.1	36.7	39.7

† indicates significant ($p < 0.05$) differences via Chi-Square from Fall to Spring. ‡ indicates significant differences via Chi-Square between males and females.

Knowledge

Results for the knowledge questions are presented in Table 3. In the Fall, 5.0% of students were able to correctly answer at least 6 of 8 food knowledge questions. This percentage increased slightly to 7.1% in the Spring, though the change was not statistically significant. There were also no significant changes in the percentages of students who correctly answered the individual food knowledge items from Fall to Spring. At both time points, students were more often able to correctly identify that pretzels were healthier than Cheetohs, and that Shredded Wheat cereal has more fiber than Trix cereal. Three of four students could also correctly identify the food with the least amount of fat by comparing food labels. Students had difficulty correctly answering the questions regarding serving sizes and MyPyramid food groups.

In the Fall, 76.1% of students correctly answered at least 3 of 4 physical activity knowledge questions. This composite percentage significantly increased to 83.6% in the Spring, though the improvements in answering the individual physical activity knowledge questions were not statistically significant. More than 90% of children at both time points knew that physical activity is important for health, and more than 3 of 4 children knew how much physical activity they should do.

In the Fall, twice as many males as females correctly identified how many servings of fiber and grains should be consumed each day. There were no other gender differences in food or physical activity knowledge at either time point.

Table 3. Percentage of Children Who Answered Knowledge Items Correctly.

	Total (%)		Males (%)		Females (%)	
	Fall	Spring	Fall	Spring	Fall	Spring
Food Knowledge						
Servings of fiber per day	16.4	13.6	21.4‡	18.0	12.7‡	9.7
Servings of grains per day	16.0	16.6	21.5‡	19.6	12.0‡	13.8
Servings of dairy per day	43.1	46.0	42.8	47.8	43.1	44.4
Largest food group in MyPyramid	7.7	6.8	6.9	8.1	7.8	5.6
Food label with lowest fat	73.7	76.4	70.6	76.2	76.4	76.7
Fiber lowers disease risk	45.0	49.4	46.9	46.9	43.9	51.6
Identify the healthier snack choice	82.1	81.4	77.4	82.1	85.5	80.8
Identify the high-fiber cereal	77.4	83.3	74.0	81.8	80.4	84.7
Composite score (≥ 6 of 8 items)	5.0	7.1	5.2	8.0	5.0	6.3
Physical Activity Knowledge						
Physical activity per day	75.6	81.4	15.3	12.5	11.5	8.0
Days a week should be active	84.8	89.5	16.9	20.5	23.2	21.4
Should warm up and cool down	58.5	60.3	54.6	57.7	61.3	62.7
Important for health to be active	93.3	94.9	91.3	94.6	95.5	95.2
Composite score (≥ 3 of 4 items)	76.1†	83.6†	15.9	13.4	19.8	12.7

† indicates significant ($p < 0.05$) differences via Chi-Square from Fall to Spring. ‡ indicates significant differences via Chi-Square between males and females.

Confidence

Results for the confidence questions are presented in Table 4. Eighty percent of students in the Fall were confident in their overall ability to make healthy food choices compared to 86% of students in the Spring; this difference is not significant, however. The only significant change in food confidence from Fall to Spring was that more students in Spring compared to Fall were sure they could choose frozen yogurt over ice cream.

Improvements in physical activity confidence were evident. More students in Spring compared to Fall were sure they could be active at least 5 days per week, and were sure they knew many ways they could be active. There was also a larger percentage of students who responded positively to at least 5 of the 7 physical activity confidence questions (i.e., the composite score). Significant improvements in the two individual physical activity confidence items listed above occurred among female students, and significant improvement in the composite score occurred among the males.

The only gender differences in responses to the confidence questions were that more females than males were sure they could drink 100% juice instead of soda at both time points.

Table 4. Percentage of Children Who Responded Positively to the Confidence Questions.

	Total (%)		Males (%)		Females (%)	
	Fall	Spring	Fall	Spring	Fall	Spring
Food Confidence						
Know what healthy foods are	93.4	94.1	90.6	92.0	96.2	96.0
Can eat fresh fruit instead of candy bar	83.6	84.0	81.7	79.5	84.7	88.1
Can drink 100% juice instead of soda	78.4	80.7	72.5‡	74.1‡	82.8‡	86.5‡
Can choose frozen yogurt over ice cream	73.9†	81.7†	71.9	82.0	75.5	81.5
Composite score (\geq 3 of 4 items)	80.1	85.7	75.6	82.1	83.4	88.9
Physical Activity Confidence						
Like being active at home and school	73.6	74.0	71.0	73.2	75.8	74.6
Not difficult to be active	52.1	46.9	53.4	49.6	51.0	44.4
Can be active 5 days per week	74.7†	85.7†	76.3	85.0	73.3†	86.4†
Know different ways to be active	84.1†	90.3†	85.3	88.4	82.7†	92.1†
Can keep moving most of time	87.6	89.0	85.5	90.1	89.1	88.0
It's easy for me to participate in activity	88.3	91.6	91.5	90.2	86.0	92.9
Someone at home to play sports/exercise	84.9	85.2	80.3	82.9	88.3	87.3
Composite score (\geq 5 of 7 items)	63.3†	72.0†	60.6†	72.6†	65.2	71.4

† indicates significant ($p < 0.05$) differences via Chi-Square from Fall to Spring. ‡ indicates significant differences via Chi-Square between males and females.

Survey Results by Grade

Results of the survey's food questions are presented in Table 5 by grade, and results of physical activity question are in Table 6 by grade. There were some significant changes from Fall to Spring and some differences in responses by grade. Because the sample size was small for each grade, differences had to be quite large to be statistically significant.

Third grade students demonstrated improvement in only one question, with a larger percentage of students in the Spring compared to Fall correctly identifying the recommended servings of dairy per day. A larger percentage of 4th grade students correctly identified the high fiber cereal and were sure they could choose frozen yogurt instead of ice cream. More 4th grade students also correctly answered 6 of 8 food knowledge questions (i.e., the food knowledge composite score), though because of small sample sizes, the significant results of this test may not be accurate. Fifth grade students did not demonstrate significant improvement in any food question or composite score.

In the Fall, there were discrepancies in the percentages of students by grade who responded positively to specific food questions. For example, the percentages of students who correctly identified the recommended number of daily servings of dairy increased from 3rd through 5th grade, as did the percentages who would choose a grilled chicken sandwich instead of a burger and the percentages who were confident they knew what healthy foods are. Fourth grade students had the lowest percentage who consumed 7 or more glasses of water daily, while 3rd graders had the highest percentage. Fifth grade students had the highest percentage who scored positively in 6 of 8 food knowledge questions (i.e., food knowledge composite score).

In the Spring, the percentages of students who correctly identified the food label with the least fat, those who ate wheat instead of white bread, and those who were sure they could choose frozen yogurt instead of ice cream increased with increasing grade level. Alternatively, the percentage of students eating 5 daily servings of fruits and vegetables was smaller with increasing grade level. Fewer 5th grade students consumed breakfast daily.

Table 5. Percentages for Individual and Composite Food Survey Items, by Grade.

Item	3 rd Grade		4 th Grade		5 th Grade	
	Fall	Spring	Fall	Spring	Fall	Spring
Food Knowledge						
Servings of fiber per day	20.5	17.2	16.4	15.0	9.7	7.4
Servings of grains per day	13.7	18.4	18.6	17.5	16.2	13.2
Servings of dairy per day	35.3†‡	49.4†	43.8‡	43.8	54.1‡	44.1
Largest food group in MyPyramid	6.3	6.7	8.9	3.9	8.1	9.9
Food label with lowest fat	68.0	66.7‡	71.9	80.3‡	83.8	83.8‡
Fiber lowers disease risk	41.1	40.5	43.1	55.8	53.4	53.5
Identify the healthier snack choice	80.0	82.4	80.4	80.0	87.5	81.7
Identify the high-fiber cereal	78.3	77.3	71.3†	85.7†	84.7	88.4
Composite score (≥ 6 of 8 items)	4.2‡	5.6	1.9*†	10.0*	10.5‡	5.6
Food Behavior						
Eat 5 servings of fruits/veg per day	15.1	22.7‡	10.5	12.5‡	13.3	7.5‡
Drink 7 or more glasses of water per day	41.4‡	36.8	25.7‡	31.3	35.1‡	30.9
Ate no sweets yesterday	47.4	39.1	39.1	36.3	29.7	32.4
Ate beans 1 or more times yesterday	14.5	14.6	16.5	17.7	25.0	20.6
Eat chips/fries on some or no days	5.4	8.0	5.8	2.6	1.4	2.8
Eat breakfast every day	81.1	78.7‡	79.6	81.8‡	76.7	64.8‡
Eat wheat bread (vs white bread)	43.8	43.2‡	53.1	47.4‡	60.0	66.2‡
Eat grilled chicken sandwich (vs burger)	34.9‡	45.4	44.9‡	51.3	54.2‡	52.9
Drink low fat or skim milk	37.2	43.2	37.8	46.0	37.7	36.2
Eat chicken without skin	31.8	35.2	34.3	32.9	47.1	40.3
Composite score (≥ 7 of 9 items)	3.4	4.4	3.8	0.0	6.6	7.0
Food Confidence						
Know what healthy foods are	89.5‡	93.3	94.1‡	94.9	98.6‡	94.4
Can eat fresh fruit instead of candy bar	78.3	77.5	85.4	85.9	89.2	90.1
Can drink 100% juice instead of soda	79.1	80.9	78.6	82.1	77.0	78.9
Can choose frozen yogurt over ice cream	73.2	73.6‡	68.9†	84.4†‡	81.9	88.7‡
Composite score (≥ 3 of 4 items)	77.4	82.0	79.6	87.2	85.1	88.7

† indicates significant ($p < 0.05$) differences via Chi-Square from Fall to Spring. * indicates significant differences via Chi-Square analysis, but small cell sizes question the accuracy of the test. ‡ indicates significant differences via Chi-Square among grades.

There were a few within-grade changes in responses to the physical activity questions from Fall to Spring, and several differences among the three grades at both time points. A larger percentage of 3rd grade students in Spring compared to Fall were sure they could be active 5 days per week. No other changes occurred for 3rd grade students. Fourth graders improved their behavior, with a larger percentage indicating being active for at least 20 min on the previous day in Spring compared to Fall. Fourth graders also improved their physical activity confidence, with a larger percentage being sure they could be active 5 days per week, sure they knew many different ways to be active, and scoring positively on at least 5 of 7 physical activity confidence questions. Significant improvements from Fall to Spring were not evident among 5th grade students, though

5th grade students experienced a decline in the percentage who were sure that being physically active was not difficult (i.e., in Spring, more 5th graders believed being active is hard).

Differences in physical activity knowledge by grade existed for one question in the Fall, with more students in 5th grade correctly identifying the amount of recommended daily physical activity compared to those in 3rd grade. This contributed to more 5th grade compared to 3rd grade students answering 3 of the 4 knowledge questions correctly in Fall.

Most grade differences occurred with the physical activity confidence questions. In the Fall, 72% of 5th grade students indicated no difficulty in being physically active compared to 43% and 47% of 3rd and 4th graders, respectively. The percentages of students who were sure they could be active 5 days per week increased with increasing grade level, as did the percentages who knew many different ways to be active, and those indicating it is easy to participate in physical activity. In Spring, 96% of 4th and 5th grade students were sure they knew many different ways to be active, significantly more than the 81% of 3rd graders who responded positively to this question. Many more 4th grade students compared to 3rd grade students were sure it is easy to participate in physical activity. So many differences in the individual questions led to an increase in the percentage of students responding positively to 5 of 7 physical activity confidence questions as grade level increased in the Fall; in the Spring, more than 80% of 4th graders were confident compared to 62% of 3rd graders.

Table 6. Percentages for Individual and Composite Physical Activity Survey Items, by Grade.

Item	3 rd Grade		4 th Grade		5 th Grade	
	Fall	Spring	Fall	Spring	Fall	Spring
Physical Activity Knowledge						
Physical activity per day	64.4‡	73.9	79.4‡	87.2	87.8‡	84.5
Days a week should be active	82.3	85.4	84.3	89.7	89.2	94.4
Should warm up and cool down every time	56.6	57.3	61.8	57.1	56.8	67.6
Important for health to be physically active	92.8	92.1	91.2	96.1	97.2	97.2
Composite score (≥ 3 of 4 items)	67.8‡	77.5	80.6‡	83.3	82.7‡	91.6
Physical Activity Behavior						
Screen time (computer, TV, video games)	53.0	39.3	38.2	41.8	42.1	44.3
Active for 20 minutes yesterday	75.5	79.3	71.8†	87.0†	82.2	83.1
Composite score (2 of 2 items)	37.1	30.3	28.2	38.0	32.9	38.0
Physical Activity Confidence						
Like being active at home or school	73.9	73.9	75.5	69.6	70.7	78.9
Not difficult to be active	43.5‡	39.3	47.0‡	49.4	72.0†‡	53.5†
Can be active 5 days per week	65.5†‡	79.8†	74.3†‡	87.2†	89.3‡	91.6
Know different ways to be active	76.3‡	80.7‡	86.0†‡	96.2†	93.3‡	95.8‡
Can keep moving most of time	87.7	83.0	84.5	92.2	91.9	93.0
It's easy for me to participate in activity	80.7‡	84.3‡	92.2‡	97.4‡	94.6‡	94.4‡
Someone at home to play sports/exercise	89.2	85.4	86.3	88.3	76.4	81.7
Composite score (≥ 5 of 7 items)	56.0‡	61.8‡	60.2†‡	81.0†‡	78.7‡	74.7‡

† indicates significant ($p < 0.05$) differences via Chi-Square from Fall to Spring. ‡ indicates significant differences via Chi-Square among grades.

BMI Results

BMI data were collected for participants in kindergarten through fifth grade. There were 583 students who were assessed during the 2011-2012 school year. Because data are not matched, only general differences among groups are assessed. Frequencies and percentages of students in each weight category are presented in Table 7. Chi-square analysis was performed to assess any weight category differences by age group, gender, or time frame, with the significance level set at 95% ($\alpha = 0.05$).

In the Fall, 35.2% of students were considered overweight or obese; this percentage increased slightly to 38.6% in the Spring (Table 7), with the change being among those considered overweight. This increase from Fall to Spring was not statistically significant, however ($\alpha > 0.05$). There were no differences in weight category by gender, age group, or within groups from Fall to Spring.

Table 7. Frequency (Percent) of Participants in Each Weight Category, by Gender and Age.

		Under and Normal Weight (< 85th percentile)	Overweight (85th to < 95th percentile)	Obese (≥95th percentile)
Fall		247 (64.8)	53 (13.9)	81 (21.3)
Spring		124 (61.4)	34 (16.8)	44 (21.8)
Gender				
Males				
	Fall	114 (61.6)	29 (15.7)	42 (22.7)
	Spring	51 (60.7)	16 (19.1)	17 (20.2)
Females				
	Fall	133 (67.9)	24 (12.2)	39 (19.9)
	Spring	73 (61.9)	18 (15.3)	27 (22.9)
Age				
< 8 years				
	Fall	106 (66.7)	26 (16.4)	27 (17.0)
	Spring	53 (64.6)	15 (18.3)	14 (17.1)
≥ 8 & < 9 years				
	Fall	41 (65.1)	5 (7.9)	17 (27.0)
	Spring	24 (57.1)	5 (11.9)	13 (31.0)
≥ 9 & < 10 years				
	Fall	38 (55.9)	8 (11.8)	22 (32.4)
	Spring	24 (66.7)	5 (13.9)	7 (19.4)
≥ 10 & < 11 years				
	Fall	39 (66.1)	9 (15.3)	11 (18.6)
	Spring	9 (42.9)	5 (23.8)	7 (33.3)

Summary

There were some improvements in nutrition and physical activity knowledge, behavior, and confidence among students participating in the CATCH Kids Club After-school programs during the 2011-2012 school year. Overall, more children were active for at least 20 minutes on the

previous day; more children responded correctly to at least 3 of 4 physical activity knowledge items; and more children responded positively to at least 5 of 7 physical activity confidence items. There were some improvements in responses to specific items among the different groups (i.e., when categorized by sex or grade). Students in 4th grade improved in more individual items (5) and composite scores (2) than the other grades and when students were categorized by sex. More improvements seemed to be present among the physical activity confidence items than the other item types.

Limitations with the survey data exist. Because the data are not matched, we cannot talk about changes specific to individuals. Participants present in the Fall may have been different than those present in the Spring. Thus, we cannot say if improvements in survey results were related to the program or to the different backgrounds of the students. Also, data collection was not a priority for several of the after-school programs, and we did not receive data for some sites. Other concerns pertaining to the BMI data include not having collected the same demographic data with BMI as was done with the survey, and not using the same age range as was used for the survey.

Future Directions

In year 6, changes to the nutrition curriculum resulted in development of a new student survey. The new survey consists of fewer items, and questions were revised to better represent what is covered in the curriculum. To improve analysis, we intend to match surveys from Fall to Spring and to match surveys with BMI data.