Summary of Findings from CMOM CUNY

Play is Learning Evaluation

Winter 2011

Executive Summary

The evaluation of childcare providers' learning from the Play is Learning curriculum about health and nutrition was based on comparisons of their responses to pre- and post-program questionnaires that reflected the content presented during he workshop. These **findings indicate that there are consistent and statistically significant (*p*<. 001) gains in providers' knowledge after participating in the program.** These findings, in conjunction assessments of their homework assignments, confirm that **participating childcare providers learned from their involvement and were able to apply and adapt what they had learned.**

A total of 57 childcare providers participated in the three-hour workshops, completing a pre- and post-workshop survey for each session. There was an overall 19% increase in correct answers from pre- to post-workshop surveys across the three sessions. More specifically, the most notable and statistically significant gains in correct responses after participating in the workshop sessions are related to 6 multiple-choice questions (answers in parentheses):

- Correctly identifying "Go Foods" *(apple)*
- How long do bones continue to grow? *(throughout life)*
- What age should children switch from whole to low-fat milk? *(Age 2)*
- It is healthier to drink orange juice than eat a whole orange. *(False)*
- Which foods are good sources of calcium? *(leafy vegetables, milk and cheese)*
- How much sleep do young children need? *(11-14 hours)*

Caregivers also provided overwhelmingly positive feedback about their experience and the program at the end of the sessions. The sincerity of participants' comments are supported by a 74% attendance and completion rate over the course of three consecutive Saturdays.

Background

The Children's Museum of Manhattan (CMOM), as part of its Healthy Living Education Initiative, partnered with the City University of New York (CUNY) to conduct the CUNY NYC Early Childhood Professional Development Institute in December 2011. Caregivers in pre-school programs volunteered to participate in three Saturday workshops at CMOM. These participants were not paid but they did receive a certificate and a membership to the Museum upon

completion. The overall goal for the program is to equip caregivers with an understanding of how core early childhood skills in literacy, art, math and science can be taught to young children, and to provide strategies, resources and tools for use in the care giving setting. This workshop model integrates knowledge, theory and practical application.

CMOM Educators introduced participants to the Healthy Living Curriculum through art activities, songs, children's stories and hands-on demonstrations of educational nutrition activities. . Between workshops, participants conducted one or more of the activities with the children they teach. Participants used examples of the children's work to report back at the next CMOM workshop.

Objectives

The objectives of this evaluation are to:

- Track voluntary participation and attendance at Workshops;
- Assess participants' learning at each of the three 3 hour workshops;
- Determine if early childhood providers could translate the activities and methods presented in the workshops to their own classrooms in homework assignments that involve teaching the material they have learned to the children with whom they work;
- Provide caregivers with the opportunity to evaluate their experience at the end of each of the workshops.

Method

In order to meet these objectives an evaluation design was developed that included: a post-program questionnaire was administered by CMOM in which participants were asked to evaluate their experience in the program; Questionnaires were developed to assess learning of the curriculum in each of the three workshops. These questionnaires were administered pre- and post-workshop in order to compare participants' knowledge of the curriculum presented. The questionnaires were one-page (two-sided) sheets that participants were asked to fill out on arrival, and again at the end of the workshop, just before they departed. The questionnaires were customized to reflect the curriculum of the particular session and illustrated with small pictures to support comprehension. The questionnaires had 5 to 8 questions, intentionally designed to be simple to read and to complete (True or False and multiple choice). Basic demographic questions were included at the end of the questionnaires. (See Appendix __ for each of the three-session questionnaire). All questionnaires were available in both English and

Spanish. It should be noted that the period of time between the pre- and post-test survey is very short by evaluation standards.

In addition, CMOM educators tracked attendance at each session and coded completion of homework assignments on a simple scale indicating that the homework had been completed and whether it had been adapted to the needs of the providers' classroom. Educators also provided observations on the presentation of homework assignments by day care providers.

Participating Day Care Providers Attendance and Completion Rate

A total of 57 providers volunteered to participate in the three-hour workshops. The majority (42) or 74% attended all three workshops. An additional 21% (12 providers) attended two of the three workshops, while 5% (3 providers) attended only one workshop.

Caregiver Educational Attainment

	N	%
Some High School	5	9.4%
GED	4	7.5%
High School	14	26.4%
Some College	18	34.0%
College Graduate	12	22.6%

There was a 74% completion rate for an unpaid, volunteer Saturday training activity. The majority of the participants were English speaking, with all but 13 of the 57 providers (77%) choosing to complete the English version of the questionnaires.

Results

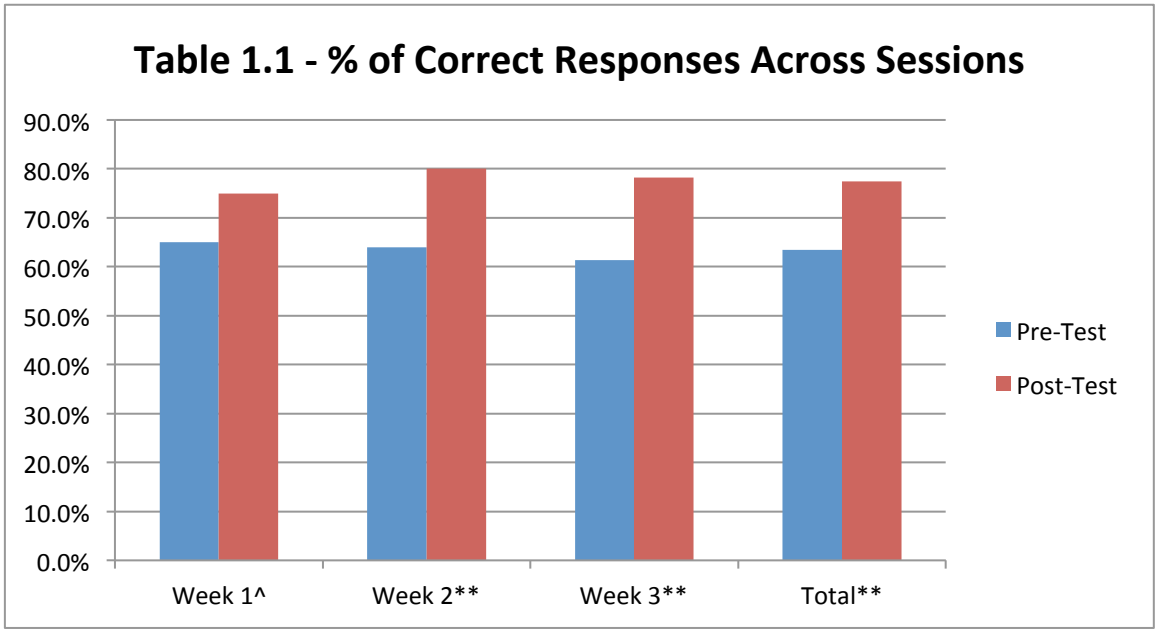
Completions of homework -- designing lessons for their own Classes

Homework assignments were given for sessions 2 and 3. Out of the 51 providers who attended Session 2, 78% (40 of the 51 participants) completed the homework assignment of designing and conducting healthy living activities and lessons for their own Class. Seven of these providers shared their homework during the workshop and all had integrated the curriculum from the previous training session into their lesson plan. Out of the 46 providers who attended Session three, 74% (34 of the 46 participants) completed the homework assignment. The assignments that were turned in as examples were done correctly (portion plates), and provided a basis for discussion in class.

Findings from Questionnaires on Content Knowledge from the Sessions

Overall, participants' provided a higher percentage of correct answers on the post-test than on the pre-test questionnaires. The full sample of providers demonstrated a significantly higher

percentage of correct responses across the three post-test questionnaires (77%) than the three pre-test questionnaires (63%; *t* (1, 54)=-6.074, *p*<. 001). Additionally, caregivers performed significantly better on all of the weekly post-tests than the pre-tests questionnaires (see Table 1.1). The average correct response rate for participants attending a particular workshop ranged from 57% to 80% correct (see Table 1.1). Note: One of the 19 questions posed in the three questionnaires asked participants to indicate which snacks they would not tell parents to serve their children. The phrasing of this question proved to be a challenge, so answers were not evaluated as correct or incorrect but are charted on page 6 with results on individual questions.



**=Statistically significant difference, *p*<. 001; ^=statistically significant difference, *p*<. 05

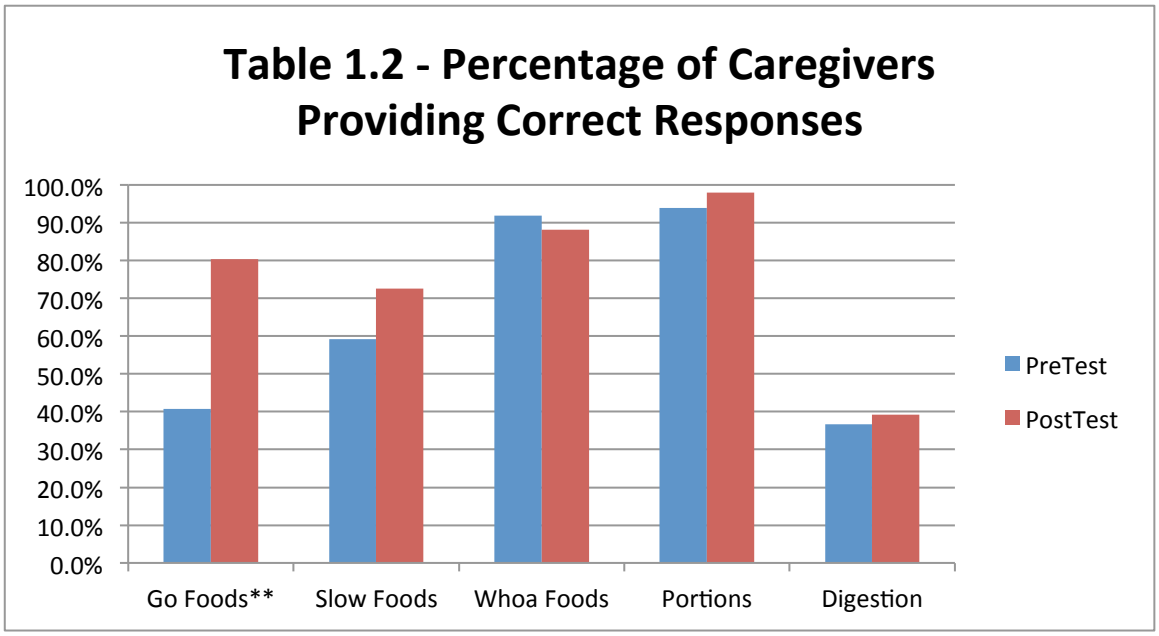
It is clear from the above chart that respondents were more likely to answer questions about relevant nutritional information after completing the workshops. **Specifically, they were able to correctly answer an average of 1.5 more questions on the post-test survey each week.** These are significant results that support the program's effectiveness in conveying specific nutritional knowledge.

Detailed Analysis of responses to post-Session Questions for the Three Workshops

Week 1: "Go, Slow, Whoa" foods

The Week 1 Workshop focused on the concept of *"Go, Slow, Whoa" foods*, portion control, vegetables and healthy snack foods. Forty-seven participants completed both the pre- and post-

test questionnaire while an additional 2 participants completed the pre-test only (49 total) and 4 only completely the post-test (41 total). The majority of participants completed the survey in English (39, or 76%). There were five questions that related directly to the curriculum presented in this workshop. The percentage of correct responses to individual questions varied considerably, from 37% to 94% at pre-test, and 39% to 92% at post-test. A summary of correct response rates for the first workshop is in the following chart (Table 1.2). The



**Statistically significant difference, $p<.001$.

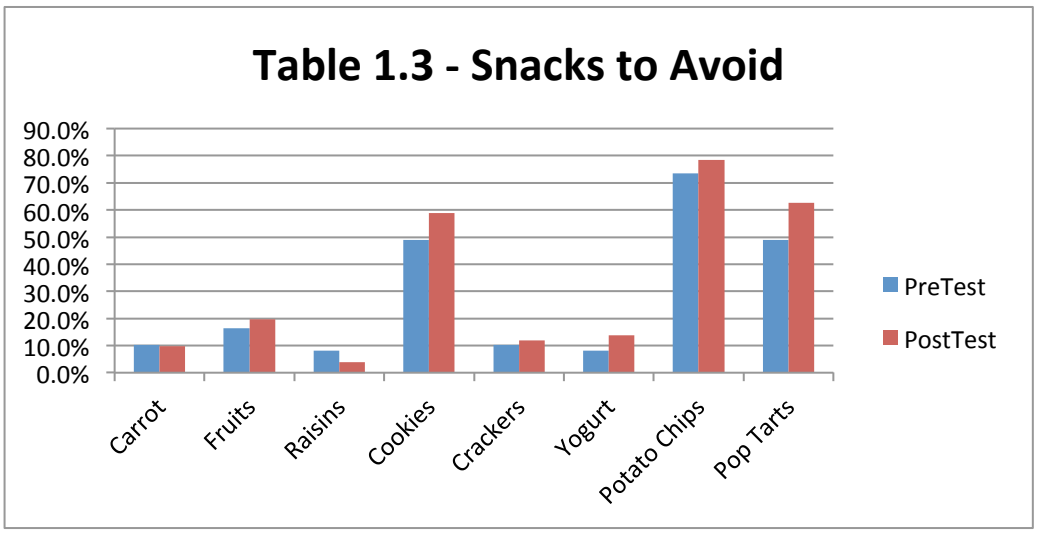
Nearly twice as many participants correctly choose "apples" as a "Go" food (or "should eat or drink as much as they like" in pre-test) on the post-test compared to the pre-test. This statistically significant difference was largely driven by a reduction in the number caregivers who answered "whole milk" from 26 (53%) at pre-test to 7 (14%) at post-test. There was a positive trend in the percentage of caregivers who correctly identified "white rice" as a "slow food," from 59% at pre- to 73% at post-test. The percentage of caregivers who were able to correctly answer that "French fries" are a "whoa food" was high at both pre- (92%) and post-test (88%).

Participants were also asked to identify *portion control* strategies from a list of four alternatives: 1) Serve foods children are less likely to want to eat; 2) Serve several small portions at a meal rather than one larger portion; 3) Serve food on smaller plates; and 4) Serve smaller meals more than three times a day. Answers 2 through 3 were identified as "correct." The percentage of

caregivers who correctly answered this question remained high at both pre- (94%) and post-test (98%).

The question about *how vegetables help the body with digestion* had 4 response choices: "vitamins," "fiber," "water," or "natural sugar." The percentage of caregivers who correctly answered "fiber" remained low at both pre- (37%) and post-test (39%). The most common incorrect answer at pre-test was "vitamins" (43%) while at post-test it was "water" (43%).

When participants were asked to identify which of eight *snack foods they would **not** recommend to parents* for their children, the most common responses at both pre- and post- were: potato chips, Pop Tarts, and cookies (See Table 1.3).

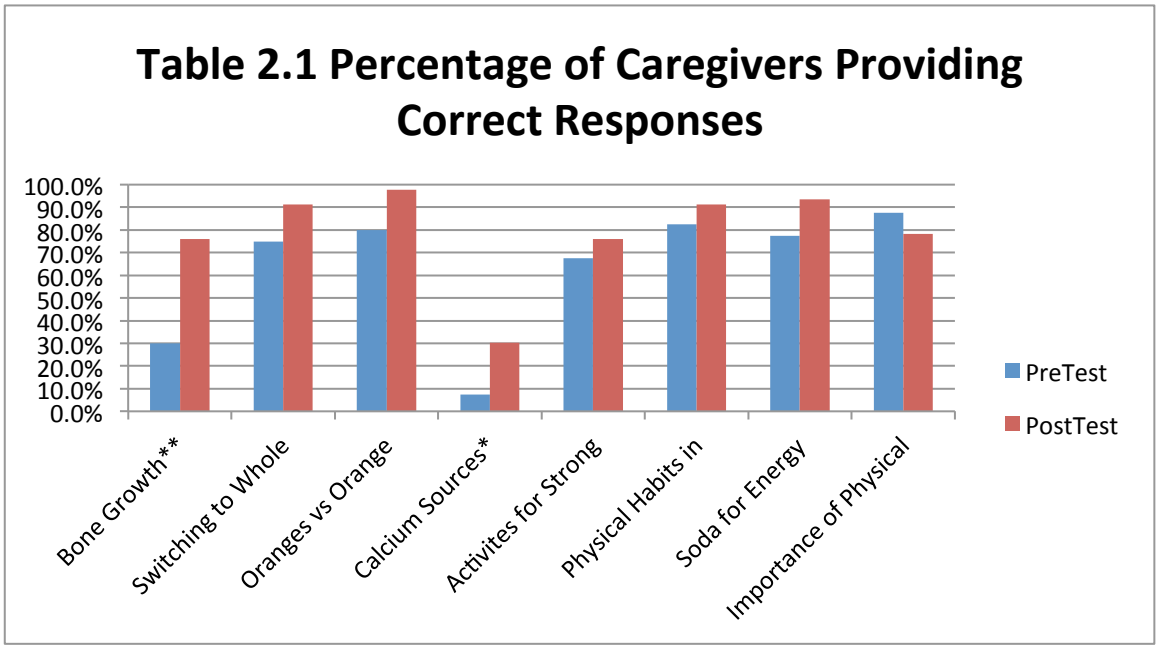


Week 2: Physical Development and Beverages

The Week 2 Workshop focused on the importance of physical activity, healthy beverage choices, and facts about bone development. Thirty-nine participants completed both the pre- and post-test questionnaires, while an additional 5 participants completed the pre-test only (44 total) and an additional 4 completely the post-test only (43 total). The majority of participants completed the survey in English (36, or 73%). The percentage of correct responses to individual questions derived from the Week 2 curriculum varied from 8% to 88% at pre-test and 30% to 98% at post-test. Positive gains were observed in 7 of the 8 questions included on the week 2 caregiver questionnaires. For four of these questions, the observed gains were statistically significant (See Table 2.1 on next page).

More than twice as many caregivers correctly answered that bones develop "throughout life" at post- (76%) than at pre-test (30%). The most common incorrect answer was "until a person has reached their full height" at both pre- (30%) and post-test (15%).

After completing the workshop, 91% of caregivers correctly answered that children should switch to low-fat milk at age 2, up from 75% at pre-test. The most common incorrect response at pre-test was "5 years-old" (13%).



**=Statistically significant difference, *p*<. 001; *=statistically significant difference, *p*<. 01

Caregivers were asked a true/false question about whether it was "healthier to drink orange juice than to eat a whole orange." **All but one caregiver correctly responded "false" after completing the workshop, down from 8 caregivers at pre-test.**

Respondents were asked to select foods that were rich in calcium from a list of five choices: "bread," "cereal," "milk and cheese," "fruit" and "leafy green vegetables." **While there was an increase in the number of caregivers who correctly responded "milk and cheese" and "leafy green vegetables" from pre- to post-test, only 30% of caregivers were correct after participating in the workshop.** The pattern of incorrect response across pre- and post-test is unclear. The number of caregivers who selected "leafy green vegetables" increased from 35% at pre-test to 90% at post-test. However, the number of caregivers who selected "milk and

cheese" decreased from 90% at pre-test to 74% at post-test. Also, more caregivers incorrectly believed that "fruit" contains calcium at post- (41%) than at pre-test (30%).

Caregivers were asked to identify which activity does not help strengthen bones from a list of five choices: walking, dancing, running, jumping rope and swinging on a swing. There was a modest positive trend reflecting an increase in the number of participants who correctly answered "swinging on a rope" from pre- (68%) to post-test (76%). Incorrect answers were spread out evenly among the other choices.

There were two small statistically non-significant increases in the number of caregivers correctly answering two true/false questions: *the importance of children establishing physical activity habits when they are young* and *soda has some sugar but is good for quick energy.* For both questions, caregivers demonstrated relatively high percentage of correct responses at pre-test (78-83%) that increased some at post-test (91-94%).

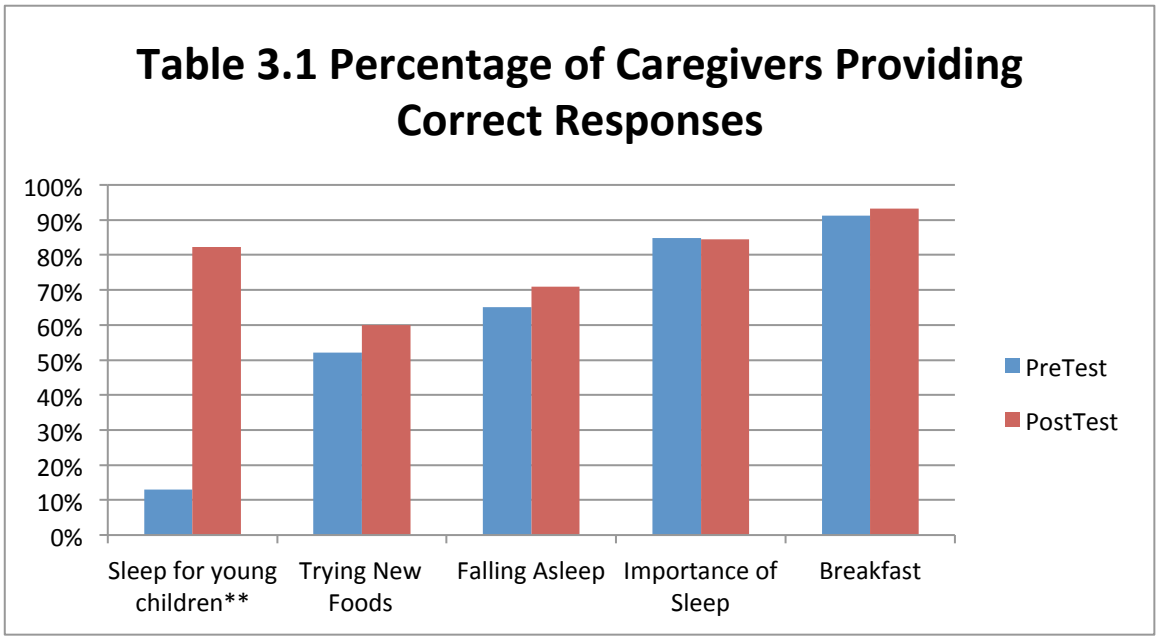
Finally, there was one question posed in the questionnaire for the 2nd session for which participants provided a higher frequency of correct responses at pre- than at post-test. They were given a list of 6 reasons why it is "important to be physically active," including the choice of "all of the above." Caregivers were given credit if they selected all of the answers or "all of the above." There were no patterns in incorrect responses at pre-test, but at post-test the most frequently omitted correct answer was "activity reduces the risk of diabetes" (17%).

Week 3: Breakfast, Sleeping, and New Foods

The Week 3 Workshop was focused the importance of sleep, nutritious breakfast foods, and how to get children to try new foods. Thirty-nine participants completed both the pre- and post-test questionnaire while an additional 7 participants completed the pre-test only (46 total) and 6 completely only the post-test (45 total). The majority of participants completed the survey in English (33, or 72%). The percentage of correct responses to individual questions varied from 13% to 91% at pre-test and 56% to 93% at post-test (see Table 3.1 on next page)

More than six times as many caregivers correctly responded children need "11-14 hours" of sleep at post- (82%) than at pre-test (13%). This difference was statistically significant. The most common incorrect responses at pre-test were "8 hours" (37%) and "as many hours as [children] want on their own" (24%).

Participants were also asked to identify which strategy, from a list of four, is *not* effective when trying to get children to try new foods. There was a small but statistically non-significant difference between the number of caregivers who correctly selected "insist[ing] that the child try a new food first" at pre- (52%) and post-test (60%). Interestingly, at post-test the most common incorrect response was "present new foods in fun and appealing ways" (20%), while at pre-test the incorrect answers were spread equally among all three incorrect choices.



Respondents were asked to identifying strategies *not* to use to encourage children to fall asleep. Two answers were considered correct: "watching TV" and "eat a solid meal." Correct response rates were similarly average at both pre- (65%) and post-test (71%), with no statistically significant difference. There was no pattern in incorrect responses.

Correct response rates remained similarly high across both pre- and post-test for two additional questions: *which type of breakfast would prevent hunger later in the day* and *why getting a good sleep is important*. Respondents correctly answered "all of the above" with slightly higher frequency at pre- (85%) than at post-test (84%). Interestingly, at pre-test none of the 7 respondents who answered incorrectly selected "lack of sleep can effect by weight and healthy eating." There were no patterns in incorrect answers at post-test. Respondents correctly answered, "whole grain cereal with low fat milk" with slightly higher frequency at post- (93%) than at pre-test (91%).

Findings from Participant's Evaluation of the Program

Forty-seven participants completed a one-page evaluation of the workshops at the end of week three. Participants were asked 7 multiple-choice questions about the usefulness, completeness, presentation and clarity of the workshop and accompanying materials. **Responses were overwhelmingly positive. In fact, only one participant answered that they disagreed with the statement "I have better understanding of how to teach health concepts…" while the remaining 99.7% of questions across all evaluations were positive.**

In addition to multiple-choice questions, participants were asked two open-ended questions about the information they had learned. The majority of participants described the importance of balancing sleep, activity and healthy eating habits, but few described specific nutrition information.

Discussion

Overall Increase in Understanding

Participants showed statistically significant higher rates of correct responses on some items in all three post-workshops. They were asked a total of 18 questions assessing specific knowledge covered in the workshops, and 6 questions (or 33%) showed a statistically significant higher rate of correct response at post-test. Importantly, there were no questions in which caregivers performed statistically better at pre-test than post-test, a finding that lends further validity to the positive gains observed.

Nutritional Framing

Participants were open to extend their knowledge about nutrition and enthusiastic about the activity based method for teaching and learning. They quickly grasped new ways of thinking about or evaluating the nutritional value of foods with which they are familiar. Specifically, most identified "Go, Slow, and Whoa" foods after just one lesson. The average correct response rate for these three questions was 80%, and this number jumps to 88% when you include those answers that were partially correct (identified the correct food with another incorrect food).

Comprehending New Information/Facts

Some participant's were challenged by *new nutrition information, based on the science behind the facts*. For example, less than 40% of participants correctly identified fiber as the element

that assists the body with digestion at both pre- and post-test. Further there was virtually no improvement in correct responses from pre- (38%) to post-test (39%). Participants similarly had difficulty identifying sources of calcium. There was a large improvement from pre- (8%) to post-test (30%) in caregiver's correct response frequency, but the majority of participants continued to struggle at post-test. However, most participants learned or improved their knowledge of nutrition basics. Their interest was sustained and there is evidence that they learned many facts that they did not know prior to participation, e.g., the majority of participants (n=25, 89.3%) correctly indicated that bone development occurs throughout life, up from 20% of participants being aware of this fact at the beginning of the workshop. It is not clear from this data why most information was clearly learned by the majority of participants, but some specific points were less likely to be learned or recalled. It is also important to emphasize that in addition to participants' responses to specific questions on post-workshop questionnaires they also enthusiastically translated activities from the workshops to their own classrooms. Based on the materials and art that they brought back and displayed proudly in their reports during workshops 2 and 3, it is apparent that much of the nutritional information was understood well enough to be integrated into their own practices and contexts.

Differences in Content Delivery by Language

Research staff, including researchers fluent in Spanish, observed each of the three workshops at CMOM. While efforts were made by the workshop leaders to translate all of the content into Spanish, it was evident that the Spanish-speaking attendees were receiving a different experience then those who speak English. For example, when the group were asked questions by the English-speaking workshop leader English-speaking participants provided answers before the question was translated, limiting the Spanish-speaking participants an opportunity to hear the translator and participate. Further, given the pace of the workshop, the Spanish translators often had limited time to summarize the workshop content, providing a general overview, before the English-speaking leader moved on to additional content.

Further, there was a statistically significant difference between the frequency of correct answers provided by English-speaking caregivers across the three post-test surveys (t (1,)=2.141, $p<.05$), such that English-speaking caregivers had a higher frequency of correct responses (80%) than those speaking Spanish (68%). This difference in correct response frequency did exist at pre-test (Spanish-speaking – 57%, English-speaking – 65%), but the difference was not statistically significant, suggesting that English-speaking caregivers may have taken more content specific

knowledge from the workshop. More advanced statistical analysis was not possible given the size of the sample.

In sum

T**he evaluation of the CMOM *"Play is Learning"* program has yielded a number of positive and encouraging findings.** Childcare providers voluntarily attended on three successive Saturday mornings, expressed enjoyment about participating in the workshops, were better able to correctly answer many nutritional questions after completing the workshops, and readily integrated the information and activities from the workshops into their practice. Taken together, the *"Play is Learning"* workshops have the potential to successfully teach caregivers how to create and teach fun and educational activity-based lessons on nutrition.