

## INTERVENTION

### Color Me Healthy

North Carolina Cooperative Extension, NC State University  
Physical Activity and Nutrition Branch, NC Division of Public Health



## INTENT OF THE INTERVENTION

*Color Me Healthy (CMH)* is a research-tested intervention designed to improve fruit and vegetable intake and increase physical activity among 4 and 5 year old children in child care and preschool settings by increased exposure to nutrition education and opportunities for physical activity.

The *CMH* intervention primarily addresses the individual and interpersonal levels of the socioecologic model.

## OVERVIEW

*Color Me Healthy* is a developmentally appropriate curriculum that is highly visual and interactive. It uses color, music, dance and imaginary play to provide opportunities for physical activity and to teach children about fruits and vegetables. The intervention uses a train-the-trainer approach to support child care provider directed implementation of the program.

*CMH* underwent a formative review process that included input from preschool teachers and experts in nutrition, physical activity, and child development. *CMH* provides 12 lesson plans for teachers along with supporting instructional materials needed to implement the curriculum including: four sets of picture cards, three color classroom posters, a CD with seven original songs, 14 reproducible parent newsletters, and two color posters designed for parents. Selected materials are available in Spanish. The *CMH* web site ([www.colormehealthy.com](http://www.colormehealthy.com)) provides information to parents, including copies of newsletters, and *CMH* songs available for free download.

**Intended Population:** Primary audience: Children ages 4-5 in child care and preschool settings and their families  
Secondary audience: Child care providers

**Setting:** Child care and preschool settings

**Length of time in the field:** Since 2002

## HEALTH EQUITY CONSIDERATIONS

Color Me Healthy (CMH) is designed to improve fruit and vegetable intake and increase physical activity among 4 and 5 year old children in child care, home day care, Head Start, and preschool settings by increased exposure to nutrition education and opportunities for physical activity. Early dissemination of Color Me Healthy was funded by the Supplemental Nutrition Assistance Program – Education (SNAP-Ed) and implemented in low-income, under-resourced childcare centers participating in the Child and Adult Care Food Program (CACFP) and the Expanded Food and Nutrition Education Programs (EFNEP). Color Me Healthy has been adopted in many North Carolina counties and by the Eastern Band of the

Cherokee Indian Nation. Additionally, it has been implemented in numerous states, including a research study in Boise, Idaho.

Color Me Healthy materials are available in English and Spanish.

## CORE ELEMENTS

*This section outlines the aspects of an intervention that are central to its theory and logic and that are thought to be responsible for the intervention's effectiveness. Core elements are critical features of the intervention's intent and design and should be kept intact when the intervention is implemented or adapted.*

- 1. Training for Child Care Providers:** North Carolina uses the train-the-trainer model. *Color Me Healthy* staff provides training to Cooperative Extension Family & Consumer Sciences Agents and county Health Promotion Coordinators who in turn conduct trainings for local child care providers.
- 2. Curriculum and Teaching Materials for Teachers:** The *Color Me Healthy* curriculum includes twelve lessons designed for use during Circle Time; six imaginary trips that allow the children to use their imagination to travel to different places and events; four sets of picture cards; three classroom posters; a CD with seven original songs; and a hand stamp to reward participation in *CMH*.
- 3. Developmentally Appropriate Lessons:** *Color Me Healthy* includes twelve lessons that are highly interactive and that integrate developmentally appropriate learning activities. The lessons are taught during Circle Time, a part of the day when children gather to learn and interact. In addition, *Color Me Healthy* includes six imaginary trips.
- 4. Color Me Healthy Music:** *Color Me Healthy* includes seven original songs; children love to sing and dance to these upbeat tunes. These engaging, stick-with-you songs enhance the lessons and can reinforce messages throughout the day.
- 5. Reinforcing Classroom Environment:** Lessons are reinforced by making the classroom a colorful, inviting environment that supports the messages taught to children. The *Color Me Healthy* Kit includes classroom posters, ideas for bulletin boards, and teacher tips for ways to enhance the classroom.

## RESOURCES REQUIRED

**Staff:** Staff will need to be identified to provide training for child care providers. This may be staff with HeadStart; the state health department; Cooperative Extension; The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); Expanded Food and Nutrition Education Programs (EFNEP); Head Start Centers; Child and Adult Care Food Programs (CACFP); and Supplemental Nutrition Assistance Program – *Education* (SNAP-Ed). In North Carolina, county Health Promotion Coordinators and Cooperative Extension Family & Consumer Sciences Agents conduct trainings for child care providers on implementation of the *Color Me Healthy* curriculum.

## Training:

*Train-the-trainer:* Staff who have been identified to train child care providers will need training on the *Color Me Healthy* program. This is provided in the *Color Me Healthy Training Manual* or states can create their own train-the-trainer based on their needs. The *Color Me Healthy* staff in North Carolina is also available to conduct train-the-trainer workshops in other states.

*Child Care Provider Training:* It is suggested that child care providers receive a minimum of four hours of hands-on training in *Color Me Healthy* prior to implementation in the classroom. Trainings are most effective with small numbers of providers (less than 25).

Costs associated with trainings include: training supplies, travel mileage reimbursement, venue for training, and refreshments.

## Materials:

- English *CMH* Kits are available at cost (\$80 per kit for orders under 100 kits; \$65 per kit for orders over 100 kits).
- Spanish language *CMH* Kits are available for an additional \$25 per set for orders under 100 and \$20 per set for orders over 100.
- CDs are available for \$10 per CD for orders under 100, and \$5 per CD for orders of 100 or more.

## Other Costs:

- Mileage reimbursement for travel to conduct trainings
- Venue for training
- Refreshments at training
- Training supplies

## IMPLEMENTATION

The implementation of *Color Me Healthy* occurs at multiple levels and includes the following steps:

- 1. Train-the-trainer sessions:** Staff must be trained to provide training to child care providers on implementation of the *Color Me Healthy* program. The *Color Me Healthy Training Manual* provides guidance on planning and conducting training or states can create their own train-the-trainer model based on their needs. The *Color Me Healthy* staff in North Carolina is available to conduct train-the-trainer workshops in other states. For more information, see the **Training and Technical Assistance** section of this template.
- 2. Training for child care providers:** The *Color Me Healthy* trainers provide training for child care providers. A trainer's manual with instructions, ideas, and suggestions regarding content of the training is available to facilitate the delivery of trainings with child care providers. During this training, participants spend time modeling the Circle Time activities in order to help them become familiar and comfortable using the *Color Me Healthy* activities with the children. Each child care provider receives a copy of the *CMH* toolkit to use in their classrooms at the conclusion of the training.
- 3. Delivery of *Color Me Healthy* curriculum:** Trained teachers use the *Color Me Healthy* Kit to teach the twelve lessons during Circle Time. Each Circle Time lesson includes teaching ideas related to healthy eating and being active. In addition, each lesson

outlines the props and the action steps needed to complete each lesson. All of the props needed to teach the Circle Time lessons are provided in the *CMH* Kit and include picture cards, posters, or music on CD. Teachers also implement the imaginary trips in the classroom.

- 4. Delivery of parent newsletters/materials:** Reproducible parent newsletters (14) are provided in the *Color Me Healthy* Kit. In addition, the *CMH* web site ([www.colormehealthy.com](http://www.colormehealthy.com)) provides information to parents, including copies of the parent newsletters and the *CMH* songs available for free download. A section of the web site is tailored for parents or others interested in healthy eating and physical activity for young children. There is also a section of the web site for professionals who are interested in purchasing copies of the *CMH* Kit.

#### **Keys to Success:**

- State staff that can facilitate training and promote the use of *Color Me Healthy*.
- The *Color Me Healthy* Kit is professionally designed, full-color, and empowers child care providers to teach healthy eating and physical activity in the classroom.
- The Trainer's Manual that guides staff to deliver the trainings to child care providers in a systematic way.
- Provision of training directly to child care providers enhances the likelihood that the program will be implemented in the classroom setting as intended.
- Focus on the *Color You Healthy* lesson in the trainings enhances likelihood that child care providers will pay closer attention to their own eating and physical activity in order to serve as role models for the children.

#### **Barriers to Implementation:**

- Lack of parental awareness, buy-in, and active participation, as parental support is necessary in order to impact children's increased consumption of fruits and vegetables and participation in physical activity outside of the child care setting.
- Lack of administrator support for child care providers to be able to fully implement the *Color Me Healthy* program.
- Child care center environmental factors such as rigid center schedules or space restrictions are barriers to implementing the physical activity component of the program.
- High staff turnover, as it takes time for new staff to be trained to deliver the program.

## **EVIDENCE REVIEW SUMMARY**

**Underlying Theory:** *Color Me Healthy (CMH)* uses the individual, inter-personal and organizational levels of the Socioecologic Model and constructs from the Social Cognitive Theory including: behavioral capability, outcome expectancy, outcome expectation, observational learning, reinforcement, social support and reciprocal determinism.

**Strategies Used<sup>1</sup>:** *Color Me Healthy* includes strategies for healthy eating and physical activity that have been adapted to child care settings, including:

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<sup>1</sup> A full description of the intervention strategies used can be found on the [Center TRT website](#) with references to the sources of evidence to support the strategies.

- **Social Support for Healthy Eating and Social Support for Physical Activity** using child care providers and parents as teachers, modeling healthy eating and physical activity and encouraging a supportive environment for those healthy choices
- **School-based Physical Activity and Physical Education** also applies to childcare settings; the *Color Me Healthy* curriculum includes opportunities for the children to be active by dancing, as well as lessons about why it's important for kids to be active. Parents also receive information about physical activity via parent newsletters and website content.
- **School-based Nutrition Programs to Promote Healthy Eating** also applies to childcare settings; the *Color Me Healthy* curriculum emphasizes choosing fruits and vegetables, as well as general lessons about healthy eating. Parents also receive information about healthy eating via parent newsletters and website content.

**Research Findings and Evaluation Outcomes:** *Color Me Healthy* was developed in the field and its efficacy was evaluated as a randomized controlled trial, with random assignment at the child care center level. The intervention group consisted of 10 child care centers (n=165), while the comparison group comprised of 7 child care centers (n=98); all study sites were based in Boise, Idaho. The main outcome was fruit and vegetable snack consumption of the children; however, process evaluation data were also collected, such as children's attendance and teacher surveys to assess perceptions of fruit and vegetable snack acceptability among children.

Children were given fruit and vegetable snacks at three time points - 1 week before the *CMH* program was implemented, then at 1 week and 3 months after program completion. As a snack, children were provided 1 cup of mixed fresh fruit or 1 cup of mixed fresh vegetables. Measurement of snack consumption included weighing of the snack prior to being served to children and again after the children had the opportunity to consume the snack. Teachers were instructed to avoid encouragement or commenting about the snacks to the children.

Intervention Effect (fruit & vegetable behavior): When presented with a fruit or vegetable snack, children who participated in the *CMH* program significantly increased fruit snack consumption by approximately 21% and vegetable snack consumption by about 33% within their child care centers, from baseline to 3-months after completion of the *CMH* program (p<0.001).

Intervention Effect (child care providers' perceived impact): Teacher surveys were completed by all 10 lead teachers who implemented the *CMH* program. Ninety percent thought the children were more willing to try new foods and the children were consuming more fruits and vegetables, while all the teachers reported improved fruit and vegetable recognition, since program initiation.

Practice-based data that were available for this review show similar results in child care providers' perceived impact (Dunn et al., 2006). Eight-week follow-up surveys were completed by child care providers from 47 counties and the Cherokee reservation in North Carolina, who attended a *CMH* training (n = 486). Of those participants, 92% perceived an increase in physical activity of the children in their care, while 92% indicated that the *CMH* program increased the children's knowledge about movement. In addition, 93% perceived

that using the *CMH* program increased the children's knowledge about healthy eating, while 79% indicated that the children were more willing to try new foods and 82% reported that the curriculum had improved fruit and vegetable recognition.

Data on changes in physical activity or any behaviors outside of the child care setting among children involved in the study were not available at the time of this review.

## POTENTIAL PUBLIC HEALTH IMPACT

*Color Me Healthy* has a low to moderate potential for public health impact. The behavioral effect appears promising; however, further evaluation is needed to confirm these findings in more and diverse populations. At this point, it is unclear that *CMH*, as a standalone program, would result in a change in fruit and vegetable intake if the foods are not more accessible within the child care setting. However, *CMH* is unique, given the ease of adoption and proven potential for dissemination. In addition, the impact of the intervention could be further strengthened if the curriculum is used as part of a multi-component and comprehensive child care initiative, which includes policy and environmental changes to support the intended behaviors.

**Reach:** With approximately three-quarters of US children spending time in child care settings, this program has potential for efficiently reaching a large number of children. In addition, early dissemination of *Color Me Healthy* was funded by Supplemental Nutrition Assistance Program – Education (SNAP-Ed) and implemented in low-income, under-resourced child care centers, e.g., Expanded Food and Nutrition Education Programs (EFNEP), Head Start Centers, and Child and Adult Care Food Programs (CACFP).

**Effectiveness:** Data from the randomized controlled trial suggest that, compared to a control group, children participating in the *Color Me Healthy* program are more likely to increase consumption of fruit and vegetable snacks when presented with fruit and vegetable snacks while in child care centers, at 1 week and 3 months after the program was completed. However, it is unknown if and how children's home food consumption may have changed after completion of *CMH*.

**Adoption:** *Color Me Healthy* is designed to be used in family daycare centers, Head Start classrooms and child care centers. In North Carolina, practice-based data (Dunn et al., 2006) show there was good adoption of the program by child care providers, with an adoption rate of 85% (870 out of 1023) based upon 8- week evaluation following training. In addition, New Jersey, Pennsylvania, Indiana, Kentucky, South Dakota, South Carolina and Tennessee have statewide adoption plans. The following states have adopted *CMH* regionally: Wyoming, Maryland, and New York. Training has been provided in 17 states and more than 12,000 *CMH* Kits have been purchased by organizations in 48 states.

**Implementation:** This intervention was designed for dissemination – training, program curriculum and materials, implementation guidance and technical support for implementation are available. The program is easy to implement at a relatively low cost and there is high acceptability of the curriculum. *CMH* has been implemented in low-resource settings.

Practice-based data that were available for this review (Dunn et al., 2006) show that of the child care providers who attended *Color Me Healthy* trainings in North Carolina, 97% thought that the materials were *Excellent* or *Very Good*. Nearly all of the child care providers (99%)



were *Confident* or *Very Confident* in their ability to use the *CMH* materials after the training. The majority of the providers (91%) planned to increase the time spent teaching nutrition and physical activity in the classroom, with 29% and 68% indicating intent to incorporate *CMH* lessons into their curriculum 1 to 2 times per week and 1 to 2 times per month, respectively. It seems reasonable to expect that the intervention could be implemented as intended (with fidelity) in similar settings with similar infrastructure.

**Maintenance:** *Color Me Healthy* has been in the field for 8 years. While data for long-term maintenance of the program at the childcare center level were not available at the time of this review, it is reasonable to expect that the program could be sustained over time, given the relatively low cost of implementation and high acceptability of the *CMH* curriculum. Furthermore, maintenance at the individual-level is promising, as an increase in fruit and vegetable snack consumption was observed in children, at three months after completion of the curriculum. Future research should include examination of longer term maintenance of fruit and vegetable consumption in both the home and childcare settings.

## INTERVENTION MATERIALS

(Materials last revised: Summer 2007)

The *Color Me Healthy* curriculum materials are listed below.

To see a preview and description of each of the components of the *Color Me Healthy* Kit, please click on the PDF of the *CMH* brochure found on the [Center TRT website](#).

*Color Me Healthy* Kits can be purchased at: [www.colormehealthy.com](http://www.colormehealthy.com). A few of these kit materials are available for free download.

- The *Color Me Healthy* Kit\*
  - Teacher's Guide
  - 4 sets of picture cards
  - 3 color classroom posters
  - CD with seven original songs
  - 14 reproducible parent newsletters
  - 2 color posters designed for parents

\*Selected materials available in Spanish

- The *Color Me Healthy* web site
  - Copies of parent newsletters – English and Spanish
  - *Color Me Healthy* songs available for free download
  - Information for families on healthy eating and physical activity
  - *Color Me Healthy* recipes
  - Ability to purchase copies of the kit
  - Information for public health professionals
- The *Color Me Healthy* Training Manual
  - Manual available for staff who will be training child care providers.

## EVALUATION MATERIALS

Center TRT developed an evaluation logic model and evaluation plan for the Color Me Healthy (CMH) program for childcare centers. The logic model is intended to guide the evaluation process (as opposed to the planning process). The evaluation plan focuses on the acceptability, extent of implementation, and effectiveness of the Color Me Healthy curriculum. The evaluation addresses reach, adoption, implementation, and effectiveness of Color Me Healthy in changing outcomes related to fruit and vegetable intake and physical activity in the childcare setting. The evaluation plan provides guidance on evaluation questions and types and sources of data for both process and outcome evaluation. If you are interested in answering questions not listed on the evaluation plan, please refer to a list of additional evaluation questions found on the Center TRT website. We suggest a variety of data collection tools throughout the evaluation plan.

The CMH Logic Model and Evaluation Plan can be found on the [Center TRT website](#).

## TRAINING AND TECHNICAL ASSISTANCE

Those living in North Carolina and working with children ages four and five in a child care, school, or Head Start setting can attend training in their area and receive the *Color Me Healthy* materials. Contact the local Cooperative Extension Family & Consumer Sciences Agent or county Health Promotion Coordinator for additional information.

Training is available for interested organizations outside of North Carolina. Contact [carolyn\\_dunn@ncsu.edu](mailto:carolyn_dunn@ncsu.edu) for additional information.

## ADDITIONAL INFORMATION

**Web links:** [www.colormehealthy.com](http://www.colormehealthy.com)

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**Related Resources:**

[www.eatsmartmovemorenc.com](http://www.eatsmartmovemorenc.com)  
[www.myeatsmartmovemore.com](http://www.myeatsmartmovemore.com)  
[www.esmmweighless.com](http://www.esmmweighless.com)



**Publications:**

Witt K, Dunn C. Increasing fruit and vegetable consumption among preschoolers; evaluation of Color Me Healthy. *J Nutr Ed Behav*. 2012; 44(2): 107-113

Dunn C, Thomas C, Ward D, Pegram L, Webber K, Cullitan C. Design and implementation of a nutrition and physical activity curriculum for child care settings. *Prev Chronic Dis* [serial online] 2006 Apr [accessed: *May 28, 2009*]. Available from URL: [http://www.cdc.gov/pcd/issues/2006/apr/05\\_0039.htm](http://www.cdc.gov/pcd/issues/2006/apr/05_0039.htm).

Dunn C, Thomas C, Pegram L, Ward D, Schmal S. Color Me Healthy, preschoolers moving and eating healthfully. *Journal of Nutrition Education and Behavior*. 2004 Dec [accessed: *May 28, 2009*]. Available from URL: <http://www.colormehealthy.com/professional/Color%20Me%20Healthy%20GEM.pdf>.