Shaping Healthy Choices Program

Support provided by:

UC ANR Competitive Grant: UCANR 11-1018
USDA 2011-38420-20082
CRIS CA D NTR-2060-H
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**Support provided by:** UCANR 11-1018, USDA 2011-38420-20082, CRIS CA D NTR-2060-H
Additional Acknowledgements

University of California Cooperative Extension
Katherine Soule, San Luis Obispo & Santa Barbara Counties
Shannon Klisch, San Luis Obispo & Santa Barbara Counties
Lisa Paniagua, San Luis Obispo & Santa Barbara Counties
Melissa Lafreniere, San Luis Obispo & Santa Barbara Counties
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Additional Support Provided by:
USDA FNS SNAP-Ed
UC CalFresh State Office
Introduction

• Approximately 32% of children ages 2-19 are overweight or obese
  (Ogden et al., 2014)
• Children are not consuming adequate amounts of fruits and vegetables and some nutrients
  (Guenther, et al., 2006; Krebs-Smith, et al., 2010)
• Multi-component interventions may be necessary to improve children’s dietary behaviors
  (Briggs, et al., 2010; Hoelscher, et al., 2013)
• The Shaping Healthy Choices Program was developed to evaluate the effectiveness of a multi-component intervention to improve children’s dietary behaviors
Shaping Healthy Choices Program

Objectives

1. Increase nutrition knowledge and use of critical thinking skills
2. Promote availability, consumption, and enjoyment of fruits and vegetables
3. Improve dietary patterns and encourage physical activity
4. Foster positive changes in the school environment
5. Facilitate development of an infrastructure to sustain the program
Shaping Healthy Choices Program
Components
All components
Cultivation of environment that promotes healthy lifestyle choices, values and sustains SHCP

Wellness Policies
Establishment of School Wellness Committee to support and sustain SHCP

Supporting Regional Agriculture
Expand availability of regional produce

Nutrition Education & Promotion
Inquiry-based, garden-enhanced nutrition education; Cooking demonstrations

Family & Community Partnerships
Family Newsletters; Health fairs

Foods available on the school campus
Salad bar featuring regional produce

Adapted from Dietary Guidelines for Americans, 2010
Student Outcomes

• **Nutrition Knowledge**
  – Nutrition Knowledge Questionnaire

• **Science Process Skills**
  – Basic Test of Process Skills (BAPS) Questionnaire
  – Qualitative Classroom Data

• **Vegetable Preferences**
  – Vegetable Preference Taste Tests

• **Dietary Intake**
  – Block Food Frequency Questionnaire
  – Digital Photography Plate Waste
  – Select Biomarkers

• **Anthropometrics**
  – Body weight, height, waist circumference, blood pressure

• **Parent-Child Behaviors**
  – Parent Questionnaire
  – Parent focus groups

• **Regionality of Cafeteria Produce**
  – Analysis of procurement sources

• **School Environment**
  – Student and Community Action for Nutrition (SCAN) Rubric
  – Student and school community wellness committees
Inclusionary Criteria

• SHCP school requirements:
  – Two CA counties representative of the diverse state population
  – 30-49% student eligibility for free and reduced-price meal program
  – At least four 4th-grade classrooms
  – Teachers willing to dedicate one hour of classroom time for nutrition lessons at least twice per month
  – Not currently utilizing a salad bar
  – Not currently utilizing a garden for academic instruction

• Two schools from each county were selected
Study Design

Schools Meeting Inclusion Criteria

Randomization

Control
- Control Northern California (n = 133)
- Control Central Valley (n = 105)

Intervention
- Intervention Northern California (n = 177)
- Intervention Central Valley (n = 75)

Baseline Data Collection (n = 490) Fall 2012

2012-2013 School Year

Follow-Up Data Collection (n = 484) Spring 2013
Details of Each Component
Nutrition Education & Promotion

**Discovering Healthy Choices**
- Theory-based
  - Social Cognitive Theory
  - Constructivist Learning Theory
- Addresses Common Core State Standards and Next Generation Science Standards
- 8 sequenced modules
- Experiential learning
- Inquiry-based
- Garden-enhanced activities
- Take-home activities

**Cooking Up Healthy Choices**
- 5 Cooking demonstrations
- Reinforces classroom education
Nutrition Education & Promotion: The Gardens
Health Fairs
Family & Community Partnerships

Northern CA
• Interactive educational booths
• Outdoor games
• Petting zoo hosted by local high school 4-H program
• Local farm stand selling produce

Central Valley CA
• School garden
• Educational booths
• Cooking demonstrations
• Local fire department
• UCCE-led science experiments
Family & Community Partnerships

Team Up for Families

- Parent-School connections
- Sent home with each lesson module
- Content:
  - Parenting practices and healthy dietary behaviors
  - Nutrition concepts learned in the child’s classroom
  - Recipes from the cooking demonstrations
Procurement & Promotion of Regional Agriculture

- Procurement through regional distributors & direct farmer sales was expanded
- Meetings with Nutrition Services Director
  - Strategies for procuring regional produce
  - Methods for increasing variety of produce offered
Foods Available on the School Campus

• Salad bar
  – Variety of fruits and vegetables each day
• Nutrition Services Director taught students food safety and use of a salad bar
School Wellness Committees

Work with the school community to create a sustainable, community-driven infrastructure that will support SHCP efforts and other supplementary health and wellness ideas.
## School Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Northern California</th>
<th></th>
<th>Central Valley California</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Intervention</td>
<td>Control</td>
<td>Intervention</td>
</tr>
<tr>
<td>Participating 4&lt;sup&gt;th&lt;/sup&gt; Grade Students (n)</td>
<td>133</td>
<td>177</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total 4&lt;sup&gt;th&lt;/sup&gt; Grade Students (n)</td>
<td>136</td>
<td>188</td>
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<tr>
<td>Ethnic Diversity Index</td>
<td>64</td>
<td>76</td>
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<tr>
<td>Eligibility for Free or Reduced-Price Lunch</td>
<td>30%</td>
<td>35%</td>
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</table>
Results:

Nutrition Knowledge

Mean Nutrition Knowledge Score at Baseline and Follow-Up

<table>
<thead>
<tr>
<th>Region</th>
<th>Control n</th>
<th>Intervention n</th>
<th><em>P</em> &lt; 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern California District</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Control</td>
<td>n = 110</td>
<td>Intervention</td>
<td>n = 158</td>
</tr>
<tr>
<td>Central Valley District</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>n = 96</td>
<td>Intervention</td>
<td>n = 72</td>
</tr>
</tbody>
</table>

*P* < 0.05
Results:
Relationship Between Nutrition Knowledge and Critical Thinking Skills at Baseline

$r = 0.51, P<0.01$
$n = 465$
Significant from baseline to follow up *p < 0.05; **p < 0.01
Shaping Healthy Choices Program
2012-13 Results

- BMI percentiles
- Nutrition knowledge
- Vegetable consumption
- Vegetable identification
- Physical activity
NIFA Helps Build a Better Future for Our Children

Childhood obesity has more than doubled in children and quadrupled in adolescents in the past 30 years. USDA’s National Institute of Food and Agriculture is focused on enhancing health outcomes and preventing obesity through research, education, and extension.

The Expanded Food and Nutrition Education Program Influences Youth
In 2014, EFNEP directly reached 392,563 youth, resulting in the following positive impacts:

- **86%** increased their knowledge or ability to choose healthy foods
- **50%** increased their knowledge or ability to prepare low-cost, nutritious foods
- **48%** improved food safety and preparation knowledge or ability
- **44%** improved physical activity knowledge or practice

The Agriculture and Food Research Initiative Targets Childhood Obesity
From 2011 to 2014, AFRI Childhood Obesity Prevention Challenge Area awarded

- **39 GRANTS**
- **$80.3 MILLION**

These projects integrate research and education to:
- teach life skills, such as food preparation and preservation
- establish healthy eating and physical activity habits
- evaluate the effectiveness of varied teaching techniques in reducing unhealthy weight gain
- explore relationships between eating habits, physical activity, and weight gain
- inform school food policies and practices

NIFA-Funded Extension Helps Shape Healthy Choices in California
The Shaping Healthy Choices Program (SHCP), administered by University of California-Davis and University of California Cooperative Extension, used these five school-based intervention components to target childhood obesity:

1. Nutrition, education & promotion
2. Family & community partnerships
3. Integration of regional agriculture
4. Foods available on campus
5. School wellness policies

After nine months, rates of obesity dropped from **56% to 38%** for the children participating in the program.
“Sustainability Year” Implementation

• The SHCP is a promising program for improving nutrition and health-related behaviors

• 2013-14
  – Control schools implemented the SHCP
  – Intervention schools conducted a second implementation of SHCP with the incoming 4th graders
  – Continued data analysis indicates positive results
Shaping Healthy Choices Program
2013-14 Results

- BMI percentiles
- Nutrition knowledge
- Vegetable identification
Evaluating the relationship between fruit and vegetable intake using plasma and dermal biomarkers and reported dietary intake in 4th and 5th-grade children

1,2 Lori M. Nguyen, 1,2 RE Scherr, 3 IV Ermakov, 3 W Gellermann, 1 CL Keen, 4 S Miyamoto, 1 FM Steinberg, 4 HM Young, and 1,2 S Zidenberg-Cherr

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4 Betty Irene Moore School of Nursing, University of California, Davis, Davis, CA, USA.
Dermal Carotenoid RRS Intensity

Total Plasma Carotenoids (μg/mL)

\[ r = 0.62 \]
\[ p = <0.001 \]
Promising Results – Now What?

• Opportunities for pilot testing in a new population through UC CalFresh Nutrition Education Program

• Dissemination through an established, county-based Nutrition Education Program
  – Established relationships with schools
  – USDA FNS SNAP-Ed funds to support comprehensive nutrition education efforts
## UC CalFresh Adopts SHCP

### 2014-2015
- San Luis Obispo & Santa Barbara Counties (Santa Barbara)
- Placer & Nevada Counties (Placer)
- Butte, Sutter, Glenn, Yuba, and Colusa County Counties (Butte)

### 2015-2016
- Expansion in existing SHCP Counties
- Additional counties:
  - El Dorado, Amador, Calaveras, and Tuolumne Counties (Central Sierra)
  - San Joaquin County
Shaping Healthy Choices Program

2014-2015
4 Schools
Robert Bruce Elementary: UCCE Shaping Healthy Choices Pilot Implementation in Santa Barbara County

Presented by: Katherine E. Soule, Ph.D.
School Wellness: Student Nutrition Advisor Committee

SLM
Student Nutrition Advisory Council
HOTM
Garden

University of California
Agriculture and Natural Resources

UNIVERSITY of CALIFORNIA
califresh Nutrition Education

HEALTHY FOOD SYSTEMS • HEALTHY ENVIRONMENTS • HEALTHY COMMUNITIES • HEALTHY CALIFORNIANS
Shaping Healthy Choices Program at Rock Creek Elementary

Placer and Nevada Counties
Garden-Enhanced Nutrition Education
“All the weeds took the nutrients away from our vegetables!”

“I learned how to figure out if a food is really healthy! Just because they say it’s healthy, doesn’t mean it is. You have to read the Nutrition Facts Label.”
Shaping Healthy Choices
Butte County Cluster
Recognized by the School
Shaping Healthy Choices Program
Phase II Roll-Out

2015-2016
16 Schools
Intervention Materials Available

http://cns.ucdavis.edu/resources/shcp
Accomplishments

- Publications in peer-reviewed journals
- UC Delivers (3)
- Curricula (2)
- Invited presentations
- Grant submissions
- Doctoral Dissertations and Master’s Thesis
- Media Attention
- Advisory Board
- And....
SUCCESS