
Molika Chea, MS, CHES
CPHA HEC Meeting
January 8th, 2014
Presentation Objectives

• To become familiar with the purpose and application of the Dietary Guidelines for Americans.

• Identify challenges the population experiences in using the Dietary Guidelines.

• To describe what types of research that has been done to determine the effectiveness of the Dietary Guidelines for Americans in populations.

• Address evidence-based strategies that may work in helping the population meet the recommendations.
Presentation Outline

• History about Nutrition Recommendations

• The Dietary Guidelines for Americans
  • Background and Overview

• Nutrition Research Addressing the Dietary Guidelines

• Evidence-Based Solutions
The Basis of Nutrition Recommendations is to assist with....

- Promoting growth (children and pregnancy)
- Maintain optimal health
- Prevent nutrient deficiencies and illness
The Dietary Reference Intakes (DRIs)

### Dietary Reference Intakes (DRI): Estimated Average Requirements

**Food and Nutrition Board, Institute of Medicine, National Academies**

<table>
<thead>
<tr>
<th>Life Stage Group</th>
<th>Calcium (mg/day)</th>
<th>Protein (g/kg)</th>
<th>Vitamin A (mgRAE)</th>
<th>Vitamin C (mg)</th>
<th>Vitamin E (mg)</th>
<th>Thiamin (mg)</th>
<th>Riboflavin (mg)</th>
<th>Niacin (mg)</th>
<th>Vitamin B6 (mg)</th>
<th>Zinc (mg)</th>
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<td><strong>Children</strong></td>
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<td>19–30 yr</td>
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<td><strong>Lactation</strong></td>
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<td>209</td>
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</tbody>
</table>

**NOTE:** An Estimated Average Requirement (EAR) is the average daily nutrient intake level estimated to meet the requirements of half of the healthy individuals in a group. EARs have not been established for vitamin K, pantothenic acid, choline, chromium, fluoride, manganese, or other nutrients not yet evaluated via the EAR process.

- As retinol activity equivalents (RAE). 1 RAE = 1 μg retinol, 12 μg β-carotene, 24 μg α-carotene, or 24 μg β-cryptoxanthin. The RAE for dietary provitamin A carotenoids is 6-fold greater than retinol equivalents (RE), whereas the RAE for preformed vitamin A is the same as RE.
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The DRI’s

Provides recommended amounts of a nutrient for an individual or population in a specific life-stage and gender group.

Retrieved from:
http://www.iom.edu/Activities/Nutrition/SummaryDRIs/-/media/Files/Activity%20Files/Nutrition/DRIs/5_Summary%20Table%20Tables%201-4.pdf
A History Lesson About the Development of Food Recommendations in the U.S.

1894
- The first dietary recommendations published by the U.S. Department of Agriculture.
- Amounts for protein, carbohydrate, fat, “mineral matter”

1917
- The first food guide, “How to Select Foods” was released.
- Recommendations were made for the following food groups:
  - Meat and milk, cereals, vegetables and fruit, fats and fatty foods, sugar and sugary foods

1930s
- A food guide was released during the Great Depression, which consisted of 12 food groups.
A History of Food Recommendations

1946
“The Basic Seven”

1956
“The Basic Four”


Retrieved from: http://www.nal.usda.gov/fnic/history/7551v.gif
A History of Food Recommendations

1979
“Hassle-Free Foundation Diet”

[Image of “Hassle-Free Foundation Diet”]

1984
“The Food Guide Pyramid”

[Image of “The Food Guide Pyramid”]

Retrieved from:  http://www.vmps.us/node/350

Retrieved from:  http://www.nal.usda.gov/fnic/history/6056v.gif
A History of Food Recommendations

1992
Updated Food Guide Pyramid

2005
MyPyramid


Let’s Move Program

• http://www.youtube.com/watch?v=2oBeuSCfGeg
A History of Food Recommendations

• MyPlate (2011-Present)

What are your thoughts about the current food guidance recommendations vs. those from the past?

Although food guides provide a basis about the food groups Americans should incorporate into their diet, The Dietary Guidelines for Americans address in detail the combination of overall diet, and lifestyle choices to promote health.
Background About the Dietary Guidelines

In 1977, the Senate Select Committee on Nutrition and Human Needs released the “Dietary Goals for the United States.”

The “Dietary Goals” eventually became the “Dietary Guidelines for Americans,” with its initial release in 1980.

Reviewed and published every 5 years

Collaborative Effort

- United States Department of Agriculture (USDA)
- United States Department of Health and Human Services (HHS)

A team of scientists and health professionals analyze scientific research to come up with recommendations for healthy eating, physical activity, and food safety.
The 1980s

1980

1. Nutrition and Your Health
2. Eat a Variety of Foods page 4
3. Maintain Ideal Weight page 7
4. Avoid Too Much Fat, Saturated Fat, and Cholesterol page 11
5. Avoid Too Much Fat, Saturated Fat, and Cholesterol page 11
6. Eat Foods with Adequate Starch and Fiber page 13
7. Avoid Too Much Sugar page 15
8. Avoid Too Much Sodium page 17

1985

1. Nutrition and Your Health
2. Eat a Variety of Foods page 6
3. Maintain Desirable Weight page 9
4. Avoid Too Much Fat, Saturated Fat, and Cholesterol page 16
5. Eat Foods with Adequate Starch and Fiber page 17
6. Avoid Too Much Sugar page 19
7. Avoid Too Much Sodium page 21
8. If You Drink Alcoholic Beverages, Do So in Moderation page 23

Retrieved from:
http://www.health.gov/dietaryguidelines/pubs.asp#eighties
The 1990s

1990

Dietary Guidelines for Americans

Eat a variety of foods page 5
Maintain healthy weight page 3
Choose a diet low in fat, saturated fat, and cholesterol page 13
Choose a diet with plenty of vegetables, fruits, and grain products page 18
Use sugars only in moderation page 27
Use salt and sodium only in moderation page 23
If you drink alcoholic beverages, do so in moderation page 25

1995

Balance the food you eat with physical activity to maintain or improve your weight
Choose a diet with plenty of grain products, vegetables, and fruits
Choose a diet low in fat, saturated fat, and cholesterol
Eat a variety of foods
Choose a diet moderate in fat and sodium
Choose a diet moderate in sugars
If you drink alcoholic beverages, do so in moderation

The 2000s

2000

2005

Dietary Guidelines for Americans
2005

Retrieved from:
http://www.health.gov/dietaryguidelines/pubs.asp#twothousand
The 2010s

2010

2015

Retrieved from:
http://www.health.gov/dietaryguidelines/pubs.asp#twothousand
Development of the Dietary Guidelines for Americans 2010

Stage 1: Dietary Guidelines Advisory Committee

- Review of Scientific Literature
- Develop DGAC Report about the scientific basis for Dietary Guideline Recommendations.

Stage 2: USDA and HHS develop the policy document, Dietary Guidelines for Americans.

Stage 3: USDA and HHS develop messages and materials communicating the Dietary Guidelines to the general public; implementation through Federal programs.

- Senior Nutrition Programs
- Food Labels
- SNAP-ED
- WIC
- School Lunch
Examples of Nutrition Materials

- Ten Tips Series on ChooseMyPlate.gov
- User friendly for special populations?
The Dietary Guidelines for Americans, 2010

• Evidence-based nutritional guidance to promote health and seeks to reduce the prevalence of overweight and obesity and the chronic disease risk (Smolin and Grosvenor, 2012)

• Targeted towards individuals ages 2 and over

• Special emphasis on:
  • Balancing calories to manage weight
  • Foods and nutrients to increase
  • Food and food components to reduce
  • Incorporation of healthy eating patterns
Components of the Dietary Guidelines for Americans

• Achieving calorie balance to maintain healthy weight

**Strategies:**
• Decreasing caloric intake and sedentary behaviors
• Increasing physical activity

Components of the Dietary Guidelines for Americans

Food Components to Increase
- Fruits and vegetables
  - Variety
- Whole Grains
- Fat-free or low-fat milk and milk products
- Protein - variety is encouraged
- Oils - replace with solid fats
- Selecting foods that contain more potassium, dietary fiber, calcium, and vitamin D

Food Components to Decrease
- Sodium
- Saturated fats
- Trans fats
- Cholesterol
- Solid fats and added sugars (Sofas)
- Alcohol in moderation
Whole Grains - Oats, rice, barley, cornmeal, rye, quinoa

**Endosperm**
- Largest portion of a grain kernel.
- Contains starch & protein.
- Some vitamins and minerals.

**Bran**
- Outermost layer
- Concentrated source of dietary fiber, vitamins, and minerals.

**Germ**
- Kernel base
- Embryo where sprouting takes place.
- Source of vegetable oils and vitamin E.
One ounce of whole grains equals...

- 1 slice of whole grain bread
- ½ cup of cooked cereal (oatmeal), brown rice, or whole grain pasta
- 3 cups of popcorn
- One 6 inch tortilla
- 5 Whole grain crackers
- 1 cup of ready-to-eat cereal (or 1 ¼ cup of puffed cereal)
# Meeting Recommendations

<table>
<thead>
<tr>
<th>Grains</th>
<th>Vegetables</th>
<th>Fruits</th>
<th>Dairy</th>
<th>Protein</th>
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</thead>
<tbody>
<tr>
<td>6 ounces</td>
<td>2 1/2 cups</td>
<td>2 cups</td>
<td>3 cups</td>
<td>5 1/2 ounces</td>
</tr>
</tbody>
</table>

- **Make half your grains whole**
  - Aim for at least 3 ounces of whole grains a day

- **Vary your veggies**
  - Aim for these amounts each week:
    - Dark-green veggies = 1 1/2 cups
    - Red & orange veggies = 5 1/2 cups
    - Beans & peas = 1 1/2 cups
    - Starchy veggies = 5 cups
    - Other veggies = 4 cups

- **Focus on fruits**
  - Eat a variety of fruit
  - Choose whole or cut-up fruits more often than fruit juice

- **Get your calcium-rich foods**
  - Drink fat-free or low-fat (1%) milk for the same amount of calcium and other nutrients as whole milk but less fat and Calories
  - Select fat-free or low-fat yogurt and cheese, or try calcium-fortified soy products

- **Go lean with protein**
  - Twice a week, make seafood the protein on your plate
  - Vary your protein routine—choose beans, peas, nuts, and seeds more often
  - Keep meat and poultry portions small and lean

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- **Find your balance between food and physical activity**
  - Be physically active for at least 150 minutes each week.

- **Know your limits on fats, sugars, and sodium**
  - Your allowance for oils is 6 teaspoons a day. Limit calories from solid fats and added sugars to 260 Calories a day. Reduce sodium intake to less than 2300 mg a day.
Barriers

- Americans, especially low-income populations are not meeting the recommendations for the following food groups:

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Recommendation</th>
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<tbody>
<tr>
<td>Fruits</td>
<td>1 cup</td>
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<tr>
<td>Vegetables</td>
<td>1.6 cups</td>
</tr>
<tr>
<td>Whole Grains</td>
<td>0.6 oz</td>
</tr>
</tbody>
</table>

Reference: USDA, 2005
What are some other barriers for meeting nutrition recommendations?

- Time
- Money
- Lack of Knowledge
- Lack of Preparation Skills
- Spoilage of foods
- Lack of availability and accessibility

Glanz et al (1998)
Other Barriers: Communicating the Dietary Guideline Messages

- Make half of your plate fruits and vegetables.
- Make at least half of your grains whole grains.
- Avoid oversized portions.
- Enjoy your food, but eat less.
- Drink water instead of sugary drinks.
- Switch to fat-free or low-fat 1% milk.
- Compare sodium in foods like soup, bread, and frozen meals, and choose the foods with lower numbers.

These 7 Dietary Guideline messages have not been tested in populations!
Initial Research Findings About the Use of the Dietary Guidelines for Americans,

- Lack of compliance (Dietary Guidelines, 2005; and Dietary Guidelines Advisory Committee Report, 2010).

- Challenging to follow, especially for low-income populations, racial/ethnic groups, and children (Kirkpatrick et al, 2012).
Research Addressing the Dietary Guidelines for Americans
A Critical Assessment of Research Needs Identified by the Dietary Guidelines Committees from 1980 to 2010

Esther F. Myers, PhD, RD; Chor-San Khoo, PhD; William Murphy, MS, RD; Alison Steiber, PhD, RD; Sanjiv Agarwal, PhD, FACN

J Acad Nutr Diet. 2013; 113: 957-971

• 78 research gaps from 210 topic areas identified by the DGA Committee

• Gaps Related to Fruit, Vegetable, and Whole Grains
  • Determine the barriers for complying with the Dietary Guidelines among children, low-income populations, and various ethnic groups.
  • Identify various mechanisms to motivate individuals to change their eating behaviors and their habits.
  • Develop and test both individual based and population based interventions designed to implement the Dietary Guidelines.
  • Conduct intervention studies to guide the development of strategies, educational tools, and programs to help change dietary patterns at individual and population levels.
  • Need for research to establish the best ways to convey information about the role of diet and health to the public.
Barriers and Facilitators for Consumer Adherence to the Dietary Guidelines for Americans: The HEALTH Study

Theresa A. Nicklas, DrPH; Lisa Jahns, PhD, RD; Margaret L. Bogle, PhD, RD; Deirdra N. Chester, PhD, RD; Maria Giovanni, PhD; David M. Klurfeld, PhD; Kevin Laugero, PhD; Yan Liu, MS; Sandra Lopez; Katherine L. Tucker, PhD

• **Study Goal:**
  - Identify the barriers and facilitators to adherence to the Dietary Guidelines for Americans for four food groups (fruits, vegetables, whole grains, and low-fat dairy) that are nutrient-rich for fifth graders and unrelated adult caregivers.

• **Study Population**
  - Unrelated Adult Caregivers:  n = 281
  - Fifth Graders:  n = 321

• **Methods**
  - Nominal Group Technique
    - Involves large groups prioritizing issues and used to collect qualitative data.
# Results

<table>
<thead>
<tr>
<th>Unrelated Adult Caregiver Barriers</th>
<th>Fifth Graders - Barriers</th>
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<tbody>
<tr>
<td>• Lack of meal preparation skills or recipes (F, V, WG)</td>
<td>• Competing Foods (Milk, F, V, WG)</td>
</tr>
<tr>
<td>• Difficult to change eating habits (WG, F, V)</td>
<td>• Health Concerns (Milk)</td>
</tr>
<tr>
<td>• Cost (Milk, F, V, WG)</td>
<td>• Allergies or upset stomach</td>
</tr>
<tr>
<td>• Lack of knowledge of the recommendations, portions or health benefits (Milk, V)</td>
<td>• Taste/flavor/smell (Milk, WG, F, V)</td>
</tr>
<tr>
<td>• Taste (Milk, V, WG)</td>
<td>• Forget to eat (F, V)</td>
</tr>
<tr>
<td></td>
<td>• Hard to eat or determine recommended amounts (Milk, fruit)</td>
</tr>
</tbody>
</table>
Study Conclusions and Limitations

• **Limitations**
  • Based on MyPyramid interpretation

• **Conclusions**
  • For the barriers identified with the unrelated adult caregivers and fifth graders, future interventions can focus on trying to improve food intake from a specific food group.
Understanding barriers and facilitators of fruit and vegetable consumption among a diverse multi-ethnic population in the USA

MING-CYH YEH\textsuperscript{1,3,*}, SCOTT B. ICKES\textsuperscript{2}, LISA M. LOWENSTEIN\textsuperscript{2}, KEREM SHUVAI\textsuperscript{1}, ALICE S. AMMERMANN\textsuperscript{2}, ROSANNE FARRIS\textsuperscript{4} and DAVID L. KATZ\textsuperscript{3,5}

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*Corresponding author. E-mail: myeh@hunter.cuny.edu

SUMMARY
A diet high in fruits and vegetables (F&V) has been associated with a decreased risk of certain cancers, reduced morbidity and mortality from heart disease, and enhanced weight management. Yet to date, most of the US population does not consume the recommended amount of F&V despite numerous interventions and government guidelines to promote consumption. Research has found various impediments to F&V consumption, such as high costs, an obesogenic environment and low socio-economic status. However, studies have not sufficiently focused on barriers and enablers to F&V intake among adult multi-ethnic populations. The present qualitative study examines 147 focus group participants' perceptions of impediments and enablers to F&V consumption. Twelve focus groups were conducted among African American, Hispanic and Caucasian men and women in North Carolina and Connecticut. Focus groups were audiorecorded, transcribed verbatim and entered into QSR NVivo Software. Text data were systematically analyzed by investigators to identify recurrent themes both within and across groups and states. Focus group results indicate that most participants were aware of the health benefits associated with a diet rich in F&V. Yet many admitted not adhering to the Health and Human Services' recommendations. Individual impediments consisted of the high costs of F&V and a perceived lack of time. Early home food environment was perceived as affecting F&V consumption later in life. Other barriers reported were ethnic-specific. The African American participants reported limited access to fresh produce. This finding is consistent with numerous studies and must be addressed through health promotion intervention. Both the church and primary care clinics were described by African Americans as appropriate settings for health behavior interventions; these findings should be considered. Hispanic participants, mostly immigrants, cited inhibiting factors encountered in their adopted US environment. There is a need to improve the availability and access to fresh F&V commonly available in the home countries of Hispanic immigrants.

Key words: fruit and vegetables; barriers and facilitators; qualitative
Study Design

• **Study Objective**
  • To highlight any barriers or facilitators to fruit and vegetable consumption among African American, Hispanic, and Caucasian populations.

• **Study Population**
  • Adults in Connecticut (n = 66) and North Carolina (n = 81)

• **Methods**
  • 12 Focus Groups were conducted with 9 to 16 participants for 90 minutes
  • Separate focus groups for African American and Caucasian participants between the ages 18 to 50 and also older than 50 years to account for age differences.
  • Hispanic Focus Groups - Grouped based on degree of acculturation
  • Audio from the focus group was transcribed
Barriers in terms of Ethnicity

**African-Americans**
- Tended to use more fat and sodium in food preparation.
- Lacked access to grocery stores, which resulted in quickly consuming more fruits and vegetables, along with purchasing more foods that have longer shelf-life.
- Lack or resources to have gardens at home

**Hispanic Immigrants**
- Fruits and vegetables are less accessible than in their home country.
- Unable to purchase and incorporate native fruits and vegetables into meals.
- Unfamiliar with the fruits and vegetables common to Americans, and also how to prepare them.
- Busy and stressful work environments

**Caucasians**
- Fear of pesticide contamination in association with fruit and vegetable consumption.
Results

Barriers to Eating Fruits and Vegetables

• Cost of fruits and vegetables
• Lack of energy and preparation-time (work hours)
• Fruits and vegetables tend to spoil
• Media advertising - more emphasis on fast food restaurants
  • Fruits and vegetables are not prevalent in commercials
• Family influence (dislike towards a particular food)

Facilitators to Eating Fruits and Vegetables

• Having knowledge about the health benefits
• Recognized that fast food is an unhealthy food source
• Parental concerns about their child’s health
• Preference for fresh fruit over canned or frozen
• Family influence (women as gatekeepers)
### Facilitators in terms of Ethnicity

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Facilitators</th>
</tr>
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<tbody>
<tr>
<td>African-Americans</td>
<td>• Raised on eating fruits and vegetables and developed a taste for them.</td>
</tr>
<tr>
<td></td>
<td>• Family physicians are an important source of diet and healthy lifestyle.</td>
</tr>
<tr>
<td></td>
<td>• Church: Good setting for education and motivation for eating healthy.</td>
</tr>
<tr>
<td>Hispanic Immigrants</td>
<td>• Raised on eating fruits and vegetables and developed a taste for them.</td>
</tr>
<tr>
<td></td>
<td>• Preference for fresh fruits and vegetables, either raw or cooked (steamed vegetables).</td>
</tr>
<tr>
<td>Caucasians</td>
<td>• Fear of pesticide contamination in association with fruit and vegetable consumption.</td>
</tr>
</tbody>
</table>
Study Limitations and Conclusions

• Limitations
  • Different Spanish-speaking groups may contribute to variability in the data.
    • North Carolina: Immigrants from Mexico
    • Connecticut: Immigrants from Puerto Rico and the Dominican Republic
  • Challenging to directly compare findings due to Hispanics being grouped by acculturation rather than age when the focus groups were held
  • The questions asked in the focus group may have led participants to come up with “perceived” barriers and facilitators

• Conclusions
  • Based on the barriers and facilitators observed across all or by ethnic group, nutrition education and strategies can be tailored towards specific populations.
Trends in Dietary Fiber Intake in the United States, 1999-2008

Dana E. King, MD, MS; Arch G. Mainous III, PhD; Carol A. Lambourne, PhD

• **Study Goal:**
  • Determine the level of intake of dietary fiber in a representative adult US population over 10 years, and document progress towards the national goal of increasing intake to meet the USDA and Institute of Medicine recommendations.

• **Study Population**
  • Participants from the National Health and Nutrition Examination Surveys (NHANES), ages 18 years or older

• **Methods**
  • Surveys, physical exams, medical laboratory measurements
Results - Fiber Intake Over 10 Years

- 1999-2000: 15.6 g/day
- 2001-2002: 16.1 g/day
- 2003-2004: 15.5 g/day
- 2005-2006: 15.8 g/day
- 2007-2008: 15.9 g/day

- Obese individuals were found to have lower intake of fiber (14.6 g/day) in comparison to those that were of normal weight (15.6 g/day) or overweight (16.1 g/day).
Fiber Intake in Ethnicity Groups

Figure 4. Dietary fiber intake by race/ethnicity in the United States, 1999-2008. NHANES = National Health and Nutrition Examination Survey.

King et al, 2012
Potential Barriers to Whole Grain Consumption

- More consumption of sugar-sweetened beverages

- The taste and flavor of high-fiber food

- Cost and access

- Fast food and restaurant food consumption
  - Higher in fat, lower in fiber
Study Limitations and Conclusions

• Limitations
  • Self-reported data from 24-hour recalls
  • Fiber supplement consumption were not included in the data

• Study Conclusions
  • Americans are not meeting the dietary fiber recommendations (25 g for females, 38 g for males) attributed to various barriers
Potential Evidence-Based Strategies to Increase Fruit, Vegetables, and Whole Grain Intake in Populations
Vegetable Variety: An Effective Strategy to Increase Vegetable Intake in Adults

- Jennifer S. Meengs, MS, RD, Liane S. Roe, MPH, RD; Barbara J. Rolls, PhD
- Published in the Journal of Academy of Nutrition and Dietetics, August 2012
Does offering a Variety of Vegetables help to Increase Vegetable Intake?

**Objective**
- To determine if filling half the plate with a variety of vegetables influences vegetable consumption and meal energy intake.

**Study Design**
- The subjects consumed a lunch meal once a week for four weeks.
- **Three meals**: 1 of 3 single types of vegetable served (600 g).
- **One meal**: The 3 vegetables were served side by side (200 g each).
- Foods and beverages were weighed before and after the meal.

**Results**
- Vegetable intake was significantly affected by the variety and type that was served.
- Having 3 different vegetables on half of the plate increased vegetable intake in both men and women compared to serving them individually.
- Compared to the subjects’ preferred vegetable, the effect of variety on intake remained significant. The mean increase in consumption was $25 \pm 8$ g.

**Conclusion:**
Increasing the variety of low-energy dense vegetables at a meal can be used strategically to increase their intake.
Efficacy of a store-based environmental change intervention compared with a delayed treatment control condition on store customers’ intakes of fruits and vegetables

Etienne J. Phipps, PhD, Leonard E. Braitman, PhD, Shana D. Stites, PsyD, Samantha L. Wallace, MPH, S. Brook Singletary, MSW and Lacy H. Hunt, MS

Published in Public Health Nutrition, April 2013
Does the Store Environment have an Impact on Customers’ Fruit and Vegetable Purchasing and Eating Habits?

Objective

• To investigate the use of an intervention that involves increasing availability of fruit and vegetables through social and physical changes to the store environment and evaluating changes in the subjects’ fruit and vegetable intake.

Study Design

• Four tiendas in North Carolina were used for the intervention. They were randomized to a 2-month environmental change intervention (installing store equipment and marketing campaign) or delayed treatment control condition.
• Participants: 179 who were recent immigrants from Mexico and Central America.
• Fruit and vegetable intake was assessed using the NCI Fruit and Vegetable All-Day Screener, along with completing a fruit and vegetable variety assessment.

Results

• Customers who received the store intervention consumed almost an additional serving of fruit and vegetables, but self-efficacy decreased in purchasing fruits and vegetables in comparison to the control group.
• Availability of fresh and canned vegetables had significantly larger increases compared to the control tiendas.

Conclusion:

Environmental change strategies such as a store-based intervention can be helpful to promote healthy eating in the Latino population.
The Impact of a 16-week Dietary Intervention with Prescribed Amounts of Whole-Grain Foods on Subsequent, Elective Whole Grain Consumption

Iain A. Brownlee, Sharron A. Kuznesof, Carmel Moore, Susan A. Jebb, and Chris J. Seal

Published in the British Journal of Nutrition, September 2013
Does previous exposure to whole grains help to increase consumption?

Objective

- To assess the impact of a previous 16-week whole-grain intervention on subsequent, elective whole grain consumption in free-living individuals.

Study Design

- Control group: No dietary changes occurred
- Intervention Group 1: Had three servings of whole grains/day for 16-weeks
- Intervention Group 2:
  - First 8 weeks: Three 20 g servings of whole grains/day
  - Next 8 weeks: Six servings of whole grains/day

Results

- Data was collected over three time periods from a food frequency questionnaire, the group consuming whole grains had significantly higher intake of whole grains vs. the control group.
- In the intervention group, whole grain pasta, rice, and snacks were frequently consumed.

Conclusion:
A short-term dietary intervention can have an impact on whole grain consumption for individuals who previously consumed decreased amounts.
Potential Solutions from the Perspective of the Socioecological Model


- Social and Cultural Norms and Values
- Environmental Settings
- Sectors of Influence
- Individual Factors
  - Food and Beverage Intake
  - Physical Activity

Demographic Factors (e.g., age, gender, socioeconomic status, race/ethnicity, disability status)
- Psychosocial Factors
- Knowledge and Skills
- Gene-Environment Interactions
- Other Personal Factors

Belief Systems
- Heritage
- Religion
- Priorities
- Lifestyle
- Body Image

Government
- Public Health and Health Care Systems
- Agriculture
- Marketing/Media
- Community Design and Safety
- Foundations and Funders
- Industry
  - Food
  - Beverage
  - Physical Activity
  - Entertainment

Questions?
References


• Food and Nutrition Board. (2012). Link: http://www.iom.edu/Activities/Nutrition/SummaryDRIs/~/media/Files/Activity%20Files/Nutrition/DRIs/5_Summary%20Table%20Tables%201-4.pdf