Changing Factors in the Retail Environment to Facilitate Consumption of Healthy Grain-Based Foods

Joel Gittelsohn, Angela Trude

Center for Human Nutrition
Global Obesity Prevention Center
Johns Hopkins Bloomberg School of Public Health
June 25, 2015
Topics

• Background
  – Patterns of whole grain consumption
  – Changing the community food environment
  – Community interventions to increase whole grain consumption

• What can be done in retail food stores?
• What can be done in low income ethnic minority communities?
• Example from ongoing intervention trial
## U.S. grain consumption by ethnicity

<table>
<thead>
<tr>
<th>Grain Consumption (oz eq/d)</th>
<th>White</th>
<th>African-American</th>
<th>Hispanic</th>
<th>Asian</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Grain</td>
<td>1.11</td>
<td>0.72</td>
<td>1.29</td>
<td>0.72</td>
<td>0.87</td>
</tr>
<tr>
<td>Refined Grain</td>
<td>5.66</td>
<td>5.39</td>
<td>5.17</td>
<td>7.11</td>
<td>5.53</td>
</tr>
</tbody>
</table>

Adapted from: USDA, 2014
# U.S. grain consumption by educational level

<table>
<thead>
<tr>
<th>Grain Consumption (oz eq/d)</th>
<th>&lt;High-School</th>
<th>High-School</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Grains</td>
<td>0.97</td>
<td>0.93</td>
<td>1.17</td>
</tr>
<tr>
<td>Refined Grains</td>
<td>5.71</td>
<td>5.53</td>
<td>5.59</td>
</tr>
</tbody>
</table>

Adapted from: USDA, 2007
Community Food System

- Producers
- Manufacturers
- Wholesalers/Distributors
- Food Source
- Households
- Children
- Supermarkets, Costco, Sam's Club, Walmart
- Urban farms, community gardens
- Food pantries
- Fast Food Restaurants, Carryouts, Cornerstores, Convenience Stores, Food Assistance Programs
Ways to Change the Community Food Environment to Improve Whole Grain Consumption (1)

• Changing access to foods within retail food stores & prepared food sources by:

  – Decreasing availability of refined grain foods
  – Increasing availability of whole grain foods in small stores
  – Changing the physical location of whole grain foods
  – Manipulating price
Ways to Change the Food Environment (2)

• Changing access to whole grain foods within neighborhoods by:
  – Building new supermarkets
  – Developing farmer’s markets
  – Improving transportation

• Changing setting for provision of information (e.g., POP promotions) about whole grains
Ways to Change the Food Environment (3)

• Work in multiple settings/ institutions at the same time
  – Integrating interventions in food stores, restaurants, schools, worksites, etc. SYSTEMS APPROACH

• Policy
  – Setting store standards/requirements
  – Menu labeling, Food labeling
  – Rezoning
  – Taxes (E.g., junk food tax), Tax credits (urban farms)
Previous Community Interventions to Increase Whole Grain Consumption

• CHANGE: school and community-based intervention (Cohen, 2014)
  – Rural low income elementary school-aged children in US
  – Change in the cafeteria environment: increased whole grain food offerings
  – Did not find difference in whole grain consumption between control and intervention children after 1 year

• Shape Up Somerville (Goldberg, 2009)
  – Increased availability of whole grain in schools (as one component of program)
  – Overall SUS program showed reductions in child BMI

• Baltimore Healthy Stores (Song et al, 2009)
  - Increased stocking and sales of whole wheat breads in intervention stores, and decreased in controls.
Gaps in Previous Community Interventions to Increase Whole Grains

• Limited work to change community food environment (access), particularly in retail and prepared food stores (most work in schools)

• Limited work in low income ethnic minority communities

• Little attention to moving up the food supply chain, working at multiple levels
Gaps in Previous Community Interventions to Increase Whole Grains

- Little work at interpersonal/social levels

- Need for longer term interventions to track impact of whole grain intake changes on health outcomes

- Limited effort to engage policymakers for expanded and sustainable effects
Baltimore City Food Environment
Corner stores
Behind the glass
Carryouts: Food establishments selling ready-to-eat food and beverage for off-premises consumption (Zoning Code of Baltimore City. 1-123.1)
Interior of Carryouts
Weight status in low income African American households in Baltimore

**Children's BMI Status**
- Underweight: 1%
- Normal: 56%
- Overweight: 19%
- Obese: 24%

**Adult Caregiver’s BMI Status**
- Underweight: 0%
- Normal: 14%
- Overweight: 21%
- Obese: 65%
“Make at least HALF of your grains whole”. But...

Mean intake of grains among urban low-income AA children in Baltimore City (n=299)
Baltimore corner stores stocking of grain products (n=23)

% in stock

- White bread: 90
- Oatmeal: 60
- High fiber cereal: 40
- Brown rice: 30
- Whole wheat tortilla: 30
- Granola bars: 10
Purchase frequency of grain products among low-income AA adults in Baltimore (n=298)

<table>
<thead>
<tr>
<th>Product</th>
<th>Mean purchase frequency per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugary cereal</td>
<td>2.25</td>
</tr>
<tr>
<td>High-fiber cereal</td>
<td>1.34</td>
</tr>
<tr>
<td>Whole wheat bread</td>
<td>1.9</td>
</tr>
<tr>
<td>White bread</td>
<td>2.8</td>
</tr>
<tr>
<td>Plain oatmeal</td>
<td>1.3</td>
</tr>
</tbody>
</table>
- Funded as part of the Global Obesity Prevention Center at Johns Hopkins
Aims

1. To develop a community-based multi-component obesity prevention program, which operates at multiple levels of the Baltimore City food system

2. To increase affordability, availability, purchase, and consumption of healthy foods (including whole grains) within low-income minority neighborhoods

3. To evaluate the impact of the program on: healthy food pricing and availability; adult food purchasing and preparation; and child obesity, diet and psychosocial factors
Study Design

30 Recreation Center Zones

Wave 1:
14 Recreation Center Zones (Randomization)

7 Intervention (n=168 child-adult dyads)
7 Comparison (delayed) (n=168 child-adult dyads)

Wave 2:
16 Recreation Center Zones (Randomization)

8 Intervention (n=192 child-adult dyads)
8 Comparison (delayed) (n=192 child-adult dyads)
Improving Supply
Corner Stores and Carryouts

- Increase availability of healthier food and beverages using materials and incentives
- Increase demand for healthier food through point-of-purchase promotions
- Implement training modules for store owners
- Promote switch to lower-fat cooking methods in carryouts
Store Owner Training Videos

• Required trainings for corner stores
  • Introduction to BHCK
  • Customer service strategies for success
  • Improving your store environment

• Required trainings for carryouts
  • Introduction to BHCK
  • Customer service strategies for success
  • How to keep your food safe, fresh, and healthy

• Optional trainings
  • Making your business profitable
  • How to get WIC in your store
Phase 3: Cooking

Sub-phase 3.2: Whole Grains

Whole Wheat Bread
Example Brands:
• Nature’s Own
• Arnold
• Schmidt

Whole Wheat Pancakes
Example Brands:
• Aunt Jemima
• Hodgson Mill
• Bob’s Red Mill

Whole Wheat Pasta
Example Brands:
• Barilla
• Hodgson Mill
• Ronzoni

JHU does not endorse any product referenced in this trial which are mentioned only for illustrative purposes; in no way is JHU suggesting that any referenced product is healthier, better or worse than any other product.
Promotional Materials - HANDOUT

Whole grains
Give you complete nutritional benefit of the entire grain (Bran + Germ + Endosperm layers)

Try:
- Whole wheat bread
- Oatmeal
- Whole wheat pasta
- Popcorn

Refined grains
Are missing important nutrients because parts of the grain are removed

Limit:
- Split top wheat
- White rice
- Pasta
- Grits
- Cookies & Cakes
Rethink Your Bread

Whole Grains

8% Daily Value of Fiber

Refined Grains

4% Daily Value of Fiber

2% Daily Value of Fiber

JHU does not endorse any product referenced in this trial which are mentioned only for illustrative purposes; in no way is JHU suggesting that any referenced product is healthier, better or worse than any other product.
Wholesalers

- Increase stocks and sales of affordable healthy food options, including whole grains
- Promote BHCK supported whole grain foods through signage
- Provide discounts on promoted foods to BHCK-participating corner store and carryout owners
- Three wholesalers participating
Increasing Demand
BHCK Youth Leaders
Phase 3: Smarter Cooking Methods

**HIGHER FIBER BREAKFAST OPTION - session 2 (of 4)**

**AIM:** To encourage customers to switch from refined grains to whole grains

**INTERACTION GUIDE:**
Get their attention by:

a. Display the different kinds of grains (refined, brown and whole bread) and ask costumers to match each one with their respective label.

b. Message: **Colors can be misleading, so not all brown breads are 100% whole wheat breads!**

c. Nutrition Label – point out where to look for the fiber content and talk about the 10% rule. Look for the word **WHOLE** before the first ingredient in the label.

d. Ask if they would be willing to buy it from the store and have for breakfast or lunch (sandwich).

e. Let them try the whole-wheat tortilla with peanut butter and banana. Ask them to share their opinion with you.

f. Whole grains are rich source of vitamins and minerals and fiber. **Fibers** are great to help **digestion** and keep you **feeling full longer**, which is great for overall health!

g. Ask them how they usually have their bread. Discuss about different option for whole grains (brown rice, oatmeal, whole grain pasta, whole-grain tortilla, whole-grain flour) and give the handout with our information.

h. Thank everyone for stopping and talking to you. Give them our great looking shopping bags and talk about our program.
WHOLE GRAINS VS. Refined Grains

Try to make at least half of your grains be whole grains.

Refined grains can make you feel less full and gain weight.

Not all brown breads and grains are whole wheat.

Try

Whole wheat bread
Whole wheat pasta
Oatmeal
Brown rice
Popcorn

Avoid

Split top wheat
White rice
Pasta
Grits
Cookies & cakes
RECIPES FOR KIDS

• Whole wheat tortilla with peanut butter and banana
Increasing Demand
Social Media

- Facebook: **373** liked, Reaching **7,713** people in Baltimore

- SMS weekly text messages: **188** enrolled (~90% of intervention sample)

- Instagram: **185**

- Twitter: **70** followers
Youth Leaders on Social Media
Expansion and Sustainability
Policy

• Working with key stakeholders to develop and build the evidence base to support policies for a healthier food environment in Baltimore City, and to sustain BHCK activities

• Held 7 meetings with City stakeholders since kick-off in July 2013

• Develop simulation models of the Baltimore food environment to aid stakeholder decision-making
Policy Working Group

Baltimore City Councilman Carl Stokes
Baltimore City Councilman Pete Welch
Baltimore City Councilman Bill Henry
Laura Flamm, City Health Dept.
Katherine Klosek, The Family League
Holly Freishtat, City Food Policy Director
Preliminary Results: Availability of whole wheat products in Baltimore Corner Stores (n=9)

- Whole wheat bread: Baseline 57%, Post-intervention 71%
- Whole wheat tortillas: Baseline 0%, Post-intervention 20%
- Whole wheat pasta: Baseline 0%, Post-intervention 60%
- Brown rice: Baseline 0%, Post-intervention 71%
Preliminary Results: Sale of whole wheat products in Baltimore Corner Stores (n=9)

- Baseline mean item sold: 1.77
- Post-intervention mean item sold: 4.22
Preliminary Results: Children’s mean weekly intake of whole wheat bread, Post-Data only (n=54)

*Paired t-test: no significant difference between groups
Preliminary Results: Change in childrens’ reported grain intake (n=54)

- Whole wheat bread:
  - Control: -1.2
  - Intervention: 0.51
  - p=0.2

- White bread:
  - Control: -5.8
  - Intervention: -3.2
  - p=0.3
Summary

- Whole grain access and consumption is low, especially in low income ethnic minority settings.

- Multi-level interventions offer promise as a sustainable means of improving diet in these settings – as they work on community food systems.

- Importance of taking a supply-demand approach when promoting whole grains:
  - Increase access (supply) by working to improve supply in wholesalers, retail stores and carryouts.
  - Increase demand through point of purchase promotions.
Summary

• Work with existing and new social networks to build demand and reset social norms

• Work with policymakers and other key stakeholders to expand and sustain activities
Thank you!

• jgittel1@jhu.edu  •  www.healthystores.org