

Strategies to increase whole grain consumption: targeting school meals

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2005 Dietary Guidelines for Americans

- First recommendation for consumption of whole grains separate from all grains.
- Despite government guidelines recommending Americans eat at least half our grains whole approximately only 11% eat half of their grains as whole.

Whole Grain Council, 2013

Children prefer refined over whole grains.

- Having a child in the home influences whether refined or whole grains are consumed at home.
Lin and Yen, 2007, USDA-ERS
- Schools provide an important venue for incorporating whole grain foods into the everyday lives of American school-age children.

Conducting research to increase the consumption of whole grains in school meals



Project Coordinator, 2007-2009

Collaboration between the Institute for Obesity
Research, Texas A&M University System
and
the University of Minnesota

Project overview

To provide USDA-FNS with information about providing whole grains in schools without decreasing consumption in order to align school meal patterns with 2005 DGA.

Rationale for studies

National School Lunch Program (NSLP)

- Second largest nutrition assistance program.
- Nationally provides ~32 *million* meals per school day with approximately half of these meals provided free to students who qualify.
- Participants obtain more than one-third (35%) of their daily caloric intake at school.

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USDA – FNS, 2007-2008

Research Questions

- What experiences have schools had in providing whole grain food products in their schools?
- What types of whole-grain products best fit into school menus.

Research Questions

- What percent whole grains contained in these grain food products is acceptable to students?
- What are the indicators of success for providing whole grain foods in school?

Context of study

- Texas has the largest participation in the NSLP.
- In Texas, provides 3.1 million low-cost or free lunches each school day.
- ~47% of students in Texas public schools are Hispanic.



What experiences have Texas school dietitians had in providing whole grain food products in their schools?

Phenomenological Study

- Conducted at Texas Association of School Nutrition's Annual Conference (TASN) in June 2007.
- Roundtable discussion with 26 Texas school dietitians using 14 open-ended questions.
- Audio taped and transcribed verbatim.

Phenomenological analysis

To determine participating school dietitians' experience with providing whole grain food items in their school -

Phenomenological analysis – an approach to the “practical understanding of meanings and action” which occur within a particular context.

Miles and Huberman, 1994

Findings- Texas school dietitians' experience

“If it is ending up in the trash can, I don't care how healthy it is for you, I'm not going to keep serving that”.

“And we do all of this on a budget”.

Findings- Texas school dietitians' experience

*It's a balancing act between ...parents,
...kids...staff*

Findings- Texas school dietitians' experience

Collaboration with industry to develop whole grain food products specifically for school meals helps with success in providing these food items in schools.

What types of whole grain products best fit into Texas school menus?

Top four whole grain foods our participants would like access to:

- Hamburger bun
- Sandwich bread
- Spaghetti pasta
 - Tortilla

What percent whole grains contained in these grain food products is acceptable to students?

Consumer acceptance testing

- Utilized consumer acceptance testing with 4th – 12th grade students
 - suburban/rural school district with a mix of demographics
 - and 65.4% of their students eligible for free or reduced-price lunch.

***All testing must be conducted during scheduled lunch period, per funding agency's request.*

Consumer acceptance testing

- Hamburger bun
- Sandwich bread
- Spaghetti pasta
 - Tortilla

Whole grain food items tested using consumer acceptance testing

- Tested each type of grain product as a:
 - *100% whole grain,*
 - *partial WG,*
 - *and refined, enriched grain food*
 - *as normally served in the participating schools.*
- All foods tested had to be available for purchase to any Texas school.

Ballot development

- Utilized focus groups with K-12 grade students to explore their **perceptions** and **language** used to describe the grain foods tested in study. (n=137)
- Most frequently used descriptors were utilized in development of ballots for consumer acceptance testing. *Civille, 1986; Chambers IV and others, 1996*

Individual school's demographics – focus groups

	African American	Caucasian	Hispanic	Eligible for free or reduced-price lunch
Elementary School	31 %	17%	52%	88%
Middle School	25%	49%	25%	51%
High School	23.5%	42.7%	33.7%	55%

(n=137)

Ballot development and testing

- Cognitive interviews were conducted using a ‘think aloud’ approach with middle and high school students to determine the manner in which they processed the information on each ballot.

Carbone and others 2002; Dillman 2007

- The ballot developed for elementary school children was tested using a panel of experts, consisting of elementary school teachers.

Consumer acceptance testing

(n=278)

- Three schools (elementary, middle, high).
- Data collected during scheduled 30 minute lunch period per funding agency's request.

Individual school's demographics – taste tests

	African American	Caucasian	Hispanic	Eligible for free or reduced-price lunch
Elementary School	34 %	41%	25%	69%
Middle School	33%	16%	52%	82%
High School	23.5%	42.7%	33.7%	55%

n=278

Consumer acceptance testing

- The taste testing was conducted based on consumer testing protocol (i.e. Central Location Test).
- Foods tested were served as they normally were. e.g. spaghetti pasta with meat sauce.
- Only one food tested per day (dates randomized).

Randomization of foods tested

- All foods tested had three 3-digit randomized codes
- Codes placed on
 - Serving tray
 - Ballots
 - Side of steel pans

Results - Consumer acceptance testing

- 30% whole grain hamburger bun and bread were accepted as well as refined counterpart.
- 51% whole grain spaghetti pasta accepted as well as refined counterpart.
- Tortilla made from 8g of whole grain accepted as well as refined counterpart.

What are the indicators of success for providing whole grain foods in school?

HealthierUS School Challenge

- Established by United States Department of Agriculture's Food and Nutrition Services in 2004
- Designed to encourage schools participating in the NSLP to take a leadership role in combating childhood obesity by:
 - Providing students with healthy and nutritious food choices
 - Providing students with an opportunity to participate in physical activity



Indicator of success

- Criteria pertaining to whole grains:
 - HUSSC Gold Level School criteria - one serving of whole grain foods offered **every day** of the week was what we considered to be an indicator of success.
 - Whole grain food defined by the HealthierUS School Challenge:
 - Composed of 51% or more whole grain ingredients by weight per serving.

Method used

- Interview with Sylvia Dunn of St. Tammany Parish, LA: spring 2008.
 - Developed survey questions constructed based on this interview
- Survey questions reviewed by Texas school food service personnel (n=3)
 - Online survey tested using SurveyMonkey®
 - Survey consisted of 32 multiple choice and open ended questions

Final survey was administered online to collect data from Gold HUSSC school food service personnel.

- Survey questions constructed to determine:
 - Barriers to whole grain incorporation
 - Methods used to introduce whole grain food products
 - Types of whole gain products served
 - Use of promotional materials to encourage consumption

- Sample Participants
 - HUSSC Gold School Food Service Directors
 - (n=33)
 - Represented only Gold elementary schools (n=212)

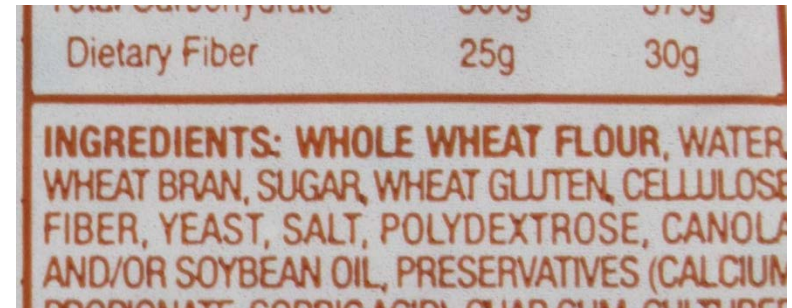


Most successful approaches to providing whole grain foods in these schools are:

1. School food service educating themselves to use the ingredient list to determine whole grain content.
2. Gradually incorporating whole grain foods into their menus by changing recipes or asking vendors to test products.
3. Limited the red whole wheat content to 51% in a food product.

Results - Barriers

- Difficulty determining if a food is considered a whole grain-
 - Majority use ingredient list or Whole Grain Council stamp
- Other Barriers Include-
 - Student acceptance
 - Preparation
 - Cost



Whole grain pilot project – 2009

“We are on the road to success of healthier children.”

Project Overview

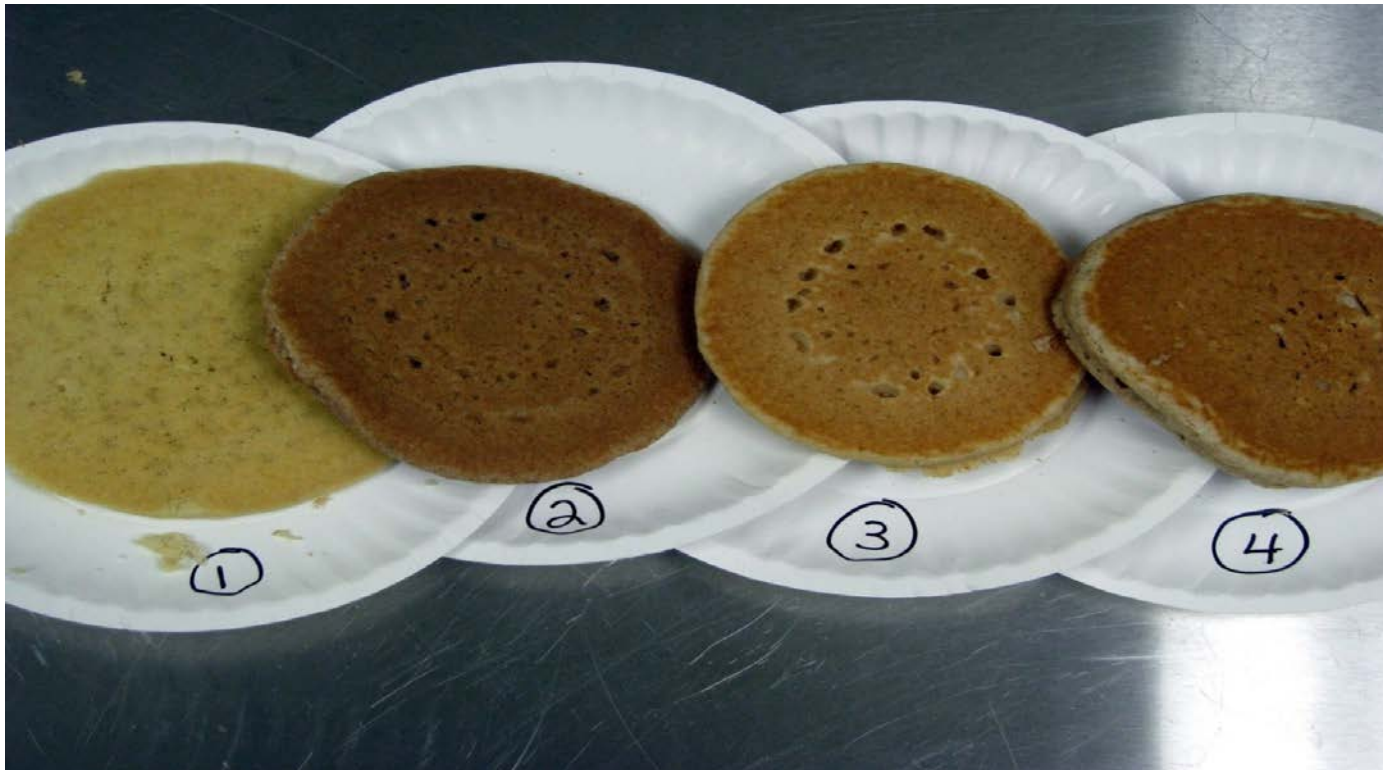
To conduct a whole grain foods evaluation concerning children participating in the National School Lunch Program and the National School Breakfast Program -- to determine their *consumption behavior* and *preference* of *commodity whole grain pancakes* and *tortillas* compared to their refined grain counterparts.

Whole grain food items tested were provided by funds from the 2008 Farm Bill.

Methods used to measure acceptance

- Aggregate Plate Waste – percent consumption
- Consumer Acceptance – students rated like/dislike of products served
- On-line survey for collecting product-centered information from participating school food service personnel across the U.S.
 - 42 states and one US territory

Foods tested: Pancakes



1) Refined 2) 100% red ww 3) 100% white ww 4) 51% red ww

ww = whole wheat

Foods tested: Tortillas



refined

100% white ww

66% white ww

ww = whole wheat

Aggregate plate waste
and
Consumer acceptance testing
conducted in
Texas and Minnesota

Demographics — children in TX and MN

The proportion of children eligible for free and reduced price meals within individual schools ranged from:

- 30% (Roseville Area Senior High, MN) to
- 100% (Hearne Elementary School, TX).

Testing Schedule for Whole Grain Foods

	Spring 2009	Fall 2009
Minnesota Pancakes	100% red whole wheat (RWW)	51% red whole wheat (RWW) 100% white whole wheat (WWW)
Tortillas	100% white whole wheat (WWW)	66% white whole wheat (WWW)
Texas Pancakes	100% red whole wheat (RWW)	51% red whole wheat (RWW) 100% white whole wheat (WWW)
Tortillas	66% white whole wheat (WWW)	100% white whole wheat (WWW)

Aggregate plate waste

- Whole grain and refined products were each served an average of four times in each school.
- Twelve elementary schools, three middle schools and two high schools were involved in the study.
- Schools were located in urban, suburban and rural areas.

Results - Aggregate plate waste

- No differences noted in consumption of 100% whole wheat pancakes compared to refined wheat pancakes.
- Consumption of whole wheat tortillas was lower than refined.
- Intake of whole grain products still quite substantial (percent consumption ranging from 67-75%).

Results - Consumer acceptance testing

- In elementary schools, overall liking scores of pancakes made with red whole wheat and both types of white whole wheat tortillas were lower than refined products.
- However, in middle and high schools, overall liking scores of 100% red whole wheat pancakes and 66% white whole wheat tortillas were similar to refined products.

School food service personnel

- Deployed using on-line survey tool – Survey Monkey
- Interested in delivery, storage, time-til-usage, menuing, preparation and serving of commodity whole grain pancakes and tortillas.
- Student's consumption behavior of whole grain foods

Participating state agencies

n = 43

- Each contact person from each participating state agency provided by USDA-FNS was contacted via e-mail.
- Contact information was requested for each state's school districts who chose to participate in the whole grain pilot.

Whole grain items tested nationally

- 100% red whole wheat pancakes
- 66% white whole wheat tortillas

Results — School food service survey

Majority of respondents indicated:

- Director of school food service as their current title
- Over 60% were from a rural school district
- Had less than 1,000 students in their school district

Did students' consumption change when offering whole grains?

- “Seems that 90% of the students really liked the pancakes and tortillas. Big shock to me!”
- “We had a very positive response to the pancakes and tortilla shells. Students were unsure when they first look at the product, however, after tasting the product they gave very good feedback.”

Results

- Thank you for this opportunity to test new products.
- We had a very positive response to the pancakes and tortilla shells. Students were unsure when they first look at the product however after tasting the product they gave very good feedback.
- Would be nice to have heating instructions w/product.

How were the commodity whole grain foods supplied for pilot used in participating schools?

- Used the same type of toppings normally served with refined grains and served for breakfast.
- Tortillas were mostly served at lunch as soft tacos, fajitas, quesadillas, and as a wrap, with the whole grain items being substituted for the refined ones.

Health vs. stealth

- Spring 2009 - Majority of schools (43%) didn't communicate anything to their students concerning serving whole grain pancakes and/or tortillas.
- Fall 2009 – Majority of schools communicated (53%) with their students about the whole grain food items on their menus.

Strategies learned

- A gradual approach to incorporating new whole grain foods into school menus is the most effective.
- Recipe modifications are effective in this approach.
- Try new products using plate waste method or consumer acceptance designed use in school cafeterias.

Strategies learned

- Make sure you train your staff on proper selection and preparation of the whole grain food items you are trying to incorporate into your menus.
- Education on all fronts is key.

Strategies learned

- Collaboration with industry can be very successful.

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