Low Whole Grain Food Availability In Three Lower Mississippi Delta Communities

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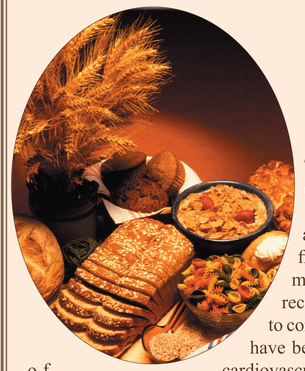


Abstract # 7379

The 2005 Dietary Guidelines for Americans (DGA) necessitates a closer look at healthy food availability in rural USA. Assessing availability of healthy foods is an important first step for consumer choices. A key DGA message is to choose whole grain foods. Any recommendation to increase consumption needs to consider availability. Diets rich in dietary fiber have been strongly associated with lowering risks of cardiovascular disease, type 2 diabetes, and hypertension, which have increased prevalence in the Lower Mississippi Delta (LMD). Previous surveys found whole grain foods most available at supermarkets and at small-medium stores. Whole wheat bread, oatmeal, and toasted oats were common whole grain foods. The LMD Nutrition Intervention Research Initiative (NIRI) surveyed 225 Delta food stores (supermarket, small-medium, and convenient) in Arkansas (77), Mississippi (90), and Louisiana (58). Oatmeal, the most available whole grain product, was found in less than half (49%) of the stores; while whole wheat bread and toasted oats were available in only 23% and 37%, respectively. Current 2005 research illustrates much less availability for smaller LMD communities with few or no supermarkets. Without a change in availability, the likelihood of this population purchasing whole grain products is small. Decreasing the prevalence of chronic disease and making healthier food choices are significant public health campaigns that must include improving food availability in the rural South.

- NHANES 2001-2002 consumption data suggest that an approximate 300% increase from current consumption levels of whole grain food products is necessary to comply with the new DGA recommended intakes.
- For a food product to boast whole grain on its label, the FDA requires the food to contain 51% or more of whole grain ingredients by weight per serving and the product must also be low in fat.
- DGA recommends three 1-ounce servings of a whole grain product per day for adults.
- The recommended dietary fiber intake for adults is 14 grams of fiber for every 1,000 calories consumed.

> Whole grain food - a food made from the entire grain seed, or kernel, which consists of the bran, germ, endosperm. The kernel must retain generally the same proportions of bran, germ, and endosperm as the original grain in order to be called a whole grain after any processing, such as crushed or flaked.
> -FDA

Table 1. Comparison of Fiber Intake in LMD Adults from FOODS 2000 and CSFII, 1994-1996

Nutrient	Delta White (n=842)	Delta African American (n=857)	US White (n=7,739)	US African American (n=1,150)	*P* value		
					D-W vs. US-W	D-AA vs. US-AA	D-W vs. D-AA
Energy (kcal)	2,089±34	1,926±32	2,058±17	2,000±44	NS*	NS*	0.0009
Fiber (g)	13.3±0.3	11.5±0.3	16.4±0.2	13.3±0.2	<0.0001	<0.0001	<0.0001

*NS = not significant

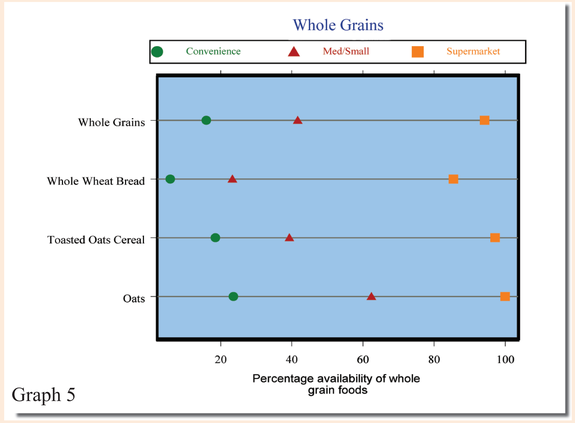
Table 2. FOODS 2000: Ranking of Major Dietary Contributors of Fiber

White Adults	African American Adults
1. White bread, rolls	1. White Bread, rolls
2. Beans	2. Beans
3. High fiber cereal	3. Salty Snacks, chips
4. Salty Snacks, chips	4. French Fries
5. French Fries	5. Cornbread

Introduction

The 2005 Dietary Guidelines for Americans outlines the current recommendations for an overall healthy diet that meets adequate nutrient needs within Caloric requirements. Evidence demonstrates that following a diet compliant with the Dietary Guidelines may prevent and reduce the risk for such chronic diseases. Major causes of morbidity and mortality among Americans, such as heart disease, type 2 diabetes, obesity, and hypertension, are related to poor diet. For the first time, a key recommendation of the new 2005 Dietary Guidelines for making healthy carbohydrate food choices includes choosing fiber-rich whole grain food products over refined grains over half the time.

Recommendations for increased whole grain food consumption require these products to be available and accessible for all Americans to choose them over refined grain products. The Lower Mississippi Delta (LMD) is a predominantly rural region made up of minorities and households with incomes below the poverty level. The LMD is highly representative of at-risk populations for obesity. In a study of LMD women, 70% of African American women and women of other racial/ethnic minority groups older than 35 years of age who had not graduated from high school were overweight. A key informant study of perceptions of community nutrition and health needs in the LMD revealed that food choices were an important concern. Cited as a problem was eating too many of the wrong foods (fast foods and high fat food) and not enough of the good foods (fruits and vegetables). In a food store survey less than half of all store types offered a whole grain food product.



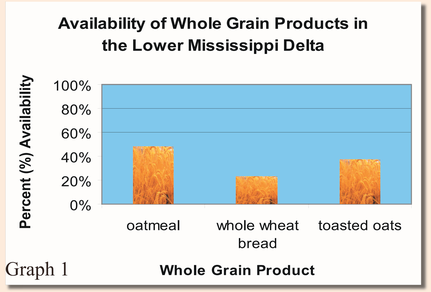
Graph 5

Methods

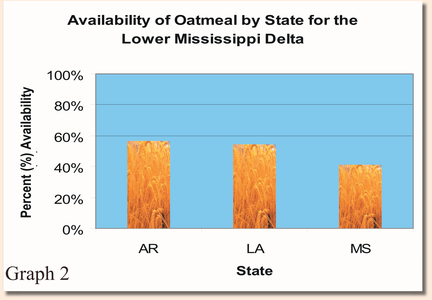
A Food Store Survey (FSS) was used to describe the nutrition environment of the Lower Mississippi Delta (LMD). The FSS is a cross-sectional survey used to collect data on food store characteristics, food availability, style and package type, food quality, and food prices. The FSS includes 106 foods that were surveyed for availability for recording each food item as available or not available. For the purpose of this study the whole grain food products, oatmeal, whole wheat bread, and toasted oats from the Thrifty Food Plan, were closely examined.

Eighteen of the 36 counties/parishes in the LMD were selected to be sampled in the Foods of Our Delta Study in 2000 (FOODS 2000). The same 18 counties were used in the FSS. For the FSS, a small sampling frame composed of all known food stores in these counties was constructed and screened. Of the 557 stores located in these counties, 225 (AR=77, LA=58, MS=90) were randomly selected for participation in the FSS. A small number of stores refused to participate. Stores were classified as supermarkets (n=62), small to medium grocery stores (n=77), or convenience stores (n=86). Within each county, five stores (fewer in counties not having 5) of each store type were randomly selected for inclusion.

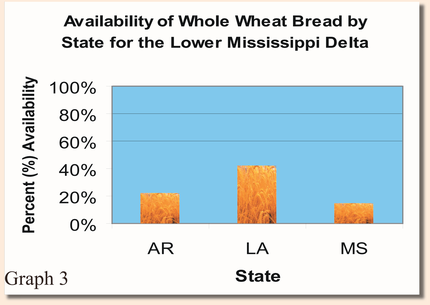
All statistical analysis were carried out using SAS 9.0 for Windows Software (SAS Institute, Cary, NC, USA) and SUDAAN software (RTI, Research Triangle Park, NC, USA). All estimates were weighted. Sampling weights were calculated as the inverse of the probability of selection.



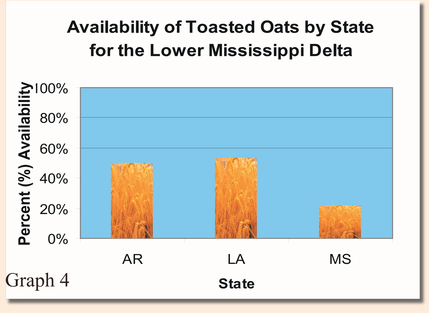
Graph 1



Graph 2



Graph 3



Graph 4

Results

Less than half of the 225 stores surveyed in the LMD carried even one whole grain product (Graph 1). Oatmeal, the most available whole grain food product surveyed, was found in 49% of the stores (Graph 1). Toasted oats were found in 37% of stores, while whole wheat bread was the least available and was found in 23% of stores (Graph 1). Availability varied greatly by state. Mississippi had the least availability (26%) of whole grain food products and Louisiana had the greatest availability (50%) (Graphs 2-4). Oatmeal was more readily available in Arkansas, while whole wheat bread and toasted oats were more readily available in Louisiana (Graphs 2-4). Whole grain food products were least available in convenience stores (Graph 5), the most accessible food store type in this region.

Table 1 illustrates that neither White nor African American adults in the LMD meet the recommendation set forth by the Dietary Guidelines for Americans 2005 for whole grain consumption. The only group represented here that meets this recommendation is US white adults (Table 1). The FOODS 2000 study was a description of food sources of nutrient intake by LMD adults. This survey confirmed that a major contributor of dietary fiber from food sources for white adults in the LMD was high fiber cereals, following white bread (rolls) and beans (Table 2). For African American adults in the LMD, white bread (rolls), beans, and cornbread were in the top five major contributors of dietary fiber. While white bread and cornbread are not excellent sources of fiber, these foods are still major contributors of dietary fiber for this population. Only one whole grain rich food product was listed as a major contributor of dietary fiber for this population (high fiber cereal) (Table 2).

> Examples of whole grains are whole wheat, oatmeal, whole corn-meal, and brown rice.

> An excellent source of fiber must provide at least 5 grams of fiber or 20% of the Daily Value for fiber per serving and be low in fat.
>
> A "good" source of fiber must provide between 2.5 and 4.9 grams of fiber or 10% of the Daily Value for fiber per serving and must also be low in fat.
> -FDA

> One serving of a whole grain product is equal to one slice of whole wheat bread, one cup of dry whole grain cereal, or half cup cooked brown rice or whole wheat pasta.

Discussion

Currently little data on availability of whole grain food products and the impact of availability on consumption exist. This research presents data on availability in a region where rates of diet-related chronic disease are high. Previous research on low fat milk availability and consumption revealed that stores in higher income or metropolitan regions offered a higher percentage of low-fat milk compared to their lower income area counterparts and found a strong, positive correlation between the proportion of low-fat milk in stores and the prevalence of low-fat milk consumption in households. Lack of availability of whole grains in the LMD, especially in convenience and small to medium stores, may contribute to poor intake and in turn to prevalence of chronic diseases that are affected by consumption of whole grains and fiber.