

# Barriers and Opportunities Related to Whole Grain Foods in Minnesota School Foodservice

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*Please note that this study was published before the implementation of Healthy, Hunger-Free Kids Act of 2010, which went into effect during the 2012-13 school year, and its provision for Smart Snacks Nutrition Standards for Competitive Food in Schools, implemented during the 2014-15 school year. As such, certain research may not be relevant today.*

## ABSTRACT

### **Purpose/Objectives**

The purpose of this research was to identify barriers and opportunities associated with the introduction of whole grain foods into school cafeterias. The primary objective was to elicit input from school foodservice personnel (SFP) regarding their experiences in ordering, purchasing, preparing, and serving whole grain foods in the school environment.

### **Methods**

Data were collected through four focus groups consisting of 36 foodservice directors and/or managers from urban, suburban, and rural school districts in Minnesota. Focus groups were held during the 2007 Minnesota School Nutrition Association's (MSNA) annual conference in Rochester, MN. Transcripts of the interviews were coded independently by two coders and differences were reconciled. Data were analyzed using a frequency and intensity of response format.

### **Results**

Participants had difficulty in defining what constitutes a whole grain product. The current definition for whole grain was viewed as ambiguous and difficult to use. Standards for ordering whole grains were also seen as problematic. The responses indicated a need for greater uniformity in specifications used for ordering and purchasing of whole grain foods in school foodservice. There was also a perceived difference in service and quality from the vendors depending on the size and location of the schools. Finally, there was a clearly expressed need for increased communication between school food service and the food industry.

### **Applications to Child Nutrition Professionals**

There is a need to set policy and regulatory guidelines to allow clarification regarding a universal definition of whole grain foods for use in school foodservice. This study has further identified the need for greater communication between schools, vendors, manufacturers and governmental agencies. The goal should be to remove confusion surrounding what definitions to use and which standards to follow when ordering and serving whole grain products in school foodservice.

## INTRODUCTION

With the release of the Dietary Guidelines for Americans, current recommendations include at least three daily servings or one-half of the 6-11 grain servings should be consumed as whole grain (U.S. Department of Agriculture [USDA], My Pyramid, 2005; U.S. Department of Health and Human Services [USDHHS], USDA, 2005a). This is supported by epidemiological evidence that links whole grains to a decreased risk of heart disease; type 2 diabetes; some types of cancer; and weight

management (Bazzano et al., 2005; Fung et al., 2002; Hu et al., 1999; Jensen et al., 2004; Liu et al., 1999; Pereira et al., 1998; Steffen et al., 2003, van Dam, Hu, Rosenberg, Krishnan, & Palmer, 2006).

Despite recent policy statements (USDA, My Pyramid, 2005; USDHHS, USDA, 2005a) along with considerable scientific evidence, whole grain intake remains less than adequate, as children, adolescents and adults consume on average 0.8, 1.0 and 1.1 daily servings of whole grains, respectively (Harnack, Walters, & Jacobs, 2003; Lin & Yen, 2007). Although Americans are currently consuming only about one-serving of whole grain each day, 71% of consumers think they are eating adequate quantities (Buzby, Farah, & Vocke, 2005; Lin & Yen, 2007). Children consume only about 32% of their recommended 3.14 ounces of whole grain per day (Lin & Yen, 2007). Low whole grain intake may be attributed to a number of consumer barriers. Consumers generally have a poor understanding and overall interest in whole grain foods (Adams, Griffiths, & Reicks, 2002). Most consumers cannot identify a whole grain food (Burgess-Champoux, Marquart, Vickers, & Reicks, 2006; Croy & Marquart, 2005; Marquart, Pham, Lautenschlager, Croy, & Sobal, 2006), they lack knowledge about whole grain foods and related health benefits (Burgess-Champoux et al., 2006; Chase, Reicks, & Jones, 2003; Croy & Marquart, 2005; Marquart et al., 2006), and they have a dislike for the taste, appearance, texture and color of whole grain foods (Bakke & Vickers, 2007). Other barriers include cost and availability (Kantor, Variyam, Allshouse, Putnam, & Lin, 2001). Ultimately, the availability of whole grain foods in the marketplace hinges on a lack of consumer demand versus industry costs to warrant greater production of these foods.

The food industry has developed and launched 5333 new whole grain products over the last eight years (Oldways Preservation Trust & Whole Grains Council, 2007b). School foodservice has also introduced more grain-based products with some level of whole grain. The specific whole grain content remains unknown due to confusing definitions and labeling of whole grain products. In addition, there appears to be considerable confusion surrounding the use of whole grain foods in schools. The confusion may be partly attributed to a lack of consensus regarding a single definition and standard for identifying a product as “whole grain”. This disparity has a wide range of implications related to school foodservice. Although whole grains are becoming more available in the cafeteria, there is little known regarding the knowledge and practices of school foodservice personnel (SFP) related to this topic. There has only been one pilot-study (Ujszaszy, Burgess-Champoux, Reicks, Lazarus, & Marquart, 2004) which evaluated SFP’s knowledge and perceptions regarding whole grains. Findings suggest SFP perceive that there are health benefits associated with the consumption of whole grains. What is not known is their level of understanding related to the definition of a whole grain, how they identify them, channels of availability, and how to increase student acceptance. This is especially relevant considering the role of SFP as gatekeepers who make daily decisions about buying, preparing, serving, monitoring and encouraging whole grain consumption for over 30 million school children and teens on a daily basis (Food and Nutrition Services, USDA, 2008). This study will attempt to clarify school foodservice directors’ level of understanding related to the definition of a whole grain, how they identify them, channels of availability from the food industry, and what are the barriers to increasing acceptance in children.

## METHODOLOGY

### **Subject recruitment**

The director of the Minnesota School Nutrition Association (MSNA) was contacted to determine if focus groups might be conducted with SFP at the Annual Conference in Rochester, Minnesota. Contact information was provided for SFP who were registered for the annual conference. Most participants (n=34) were actively recruited via phone and email four weeks prior to the conference; while on site recruitment occurred for two participants the day of the MSNA meeting. Only directors (n=30) and managers (n=6) were selected for the focus groups based on previous research examining the knowledge and perceptions of whole grains in school foodservice personnel (Chan, Hesse, Arndt, & Marquart, 2008). Foodservice directors and managers are in a unique position to provide information for both internal (school environment) and external consumer knowledge and practices related to whole grain foods.

The convenience sample included representation from 25 school districts (Table 1). Minnesota Department of Education statistics (Center for Rural Development and Policy, 2005; MN Department of Education, 2007a, b) were used to characterize the sample by school location, district size and students eligible for free and reduced meals. One-half of the participants came from rural schools, about one-third from suburban, and only 17% from urban schools. Slightly less than half of the participants were from small school districts (<4000 students), a little over a quarter from medium-sized (4000 -10,000 students), and one-quarter from large school districts (>10,000 students). Over half of the representative schools were categorized as having a “Medium” (10-30%) level of students eligible for free and reduced meals while 28% were in the “Low” (<10%) and 14% in the “High” (>30%) categories.

**Table 1. Participant Representation by School Location, District Size and Students Eligible for Free and Reduced Meals (N=36)**

<b>Location</b>		
Urban	Suburban	Rural
17% (6)	33% (12)	50% (18)
<b>District Size (# of Students)</b>		
Small (<4000)	Medium (4000 -10,000)	Large (10,000+)
47% (17)	28% (10)	25% (9)
<b>Free and Reduced Lunch Schools (%)*</b>		
Low (<10%)	Medium (10-30%)	High (>30%)
28% (10)	58% (21)	14% (5)

Source: Minnesota Dept of Education 2007a,b (Center Rural Development and Policy 2005)

\*Free and Reduced Lunch Schools includes data from 2005.

### **Procedure**

A four-member research team conducted the interviews, collected, and analyzed the data. Group interview questions were developed and designed for use in a semi-structured format to encourage free flowing discussion during focus group sessions. The questions were developed based upon a review of relevant foodservice literature, the researchers’ experience in conducting whole grain research with SFP (Chan et al., 2008), along with data from a questionnaire conducted by Ujzszasz and coworkers (2004). Questions were pilot-tested using a focus group format with seven school foodservice directors at a local food show and were modified for wording, format and sequence to comply with study objectives and improve clarity.

Four one-hour, semi-structured focus groups were conducted in adjacent conference rooms during the MSNA meeting with nine participants per session. Each session was led by the same moderator who began with an explanation of the goals of the interview and then invited participants to introduce themselves. The moderator asked open ended questions based on accepted methodology and protocol (Krueger, 1998). See Appendix for list of interview questions. Great Northern Baking Company (Minneapolis, MN) provided sample products with varying levels of whole grain ingredient content for each group session. Products included 100% whole wheat banana chocolate chip snack bread, 50% apple cinnamon Danish, 25% iced cinnamon rolls, and cherry chocolate chip muffins made with whole grain. Sample plates were prepared and labeled with the product name and percent whole grain in the product. In addition, corresponding promotional brochures including

ingredient and nutritional content were provided for each participant corresponding to each category of product. The purpose of this was to elicit discussion regarding whole grain ingredient knowledge and food definitions, such as percent whole grain. The audio recording equipment was located on the table as unobtrusively as possible. The setup was designed to facilitate discussion in a non-threatening environment between peers from different school districts (Barriball & While, 1994).

### **Data Analysis**

Audio recordings were transcribed verbatim by two members of the research team. Coding of the transcripts was conducted independently by two team members. The investigators used qualitative data analysis procedures to generate common themes (Krueger, 1998; Richards, 2005). Six distinct topics were identified based on the grouping of coded themes. Themes were identified using a frequency and intensity of response worksheet (Krueger) in conjunction with a grounded theory approach where categories and concepts emerged from the text and are then linked together (Bernhard, 2002). A third independent researcher cross-checked codes, identified minor discrepancies and different terminology used by each coder to describe the same content, and identified major themes within codes. Cross checking provides a measure of how well the data are indexed and, thus, gives a qualitative measure of inter-coder reliability (Stewart, 1998). Differences in coding were resolved through discussion, and inter-coder comparison was found to be high. The research team then met as a group to discuss the major themes and reached a consensus; all major saturated themes were identified across coders and representative quotes were identified.

## **RESULTS**

### **Thematic Analysis**

Data analysis identified six main topics and underlying themes regarding whole grain foods including: standards and definitions; packaging and labeling; distribution and availability; quality and cost; sensory and adaptation; and communication and promotion.

#### **Standard/Definition**

There was a consistent dialogue indicating that SFP have a poor understanding of whole grain definitions. Further confusion was related to the use of grams, percentages or ingredients as a means to identify the amount of whole grain in a food item. Responses included confusion with gram based standards used by manufacturers and vendors to identify the level of whole grain in a product. SFP indicated that they were more familiar with recipes in ounces. One participant summarized this frustration by the following statement, "I think we're all use to working in ounces and half ounces or in percentages. And it needs to come to us in the language that we use." Closely connected to this issue is a desire for a guarantee from vendors and manufacturers on the percentage of whole grains in their products. "You cannot guarantee it unless your distributor and your manufacturer hands it to you in writing." Simplification of whole grain criteria was also expressed repeatedly. A continuation of this theme was a need for a single clear whole grain definition commonly used on label by manufacturers, vendors, distributors and in school foodservice. "Somebody could come out with a 100%, simplified version of 'This is what you need to look for in your ingredient statement to meet the criteria of whole grain or whole wheat or multigrain', so that we all understand." The current definition and standards were clearly seen as inadequate for the needs of school foodservice.

#### **Packaging/Labeling**

Themes in this category included problems, issues, and concerns with packaging and labeling of products. Repeatedly participants expressed a desire for a clearer product label. Clarification of ingredients, whole grain percentages, and concerns with labels being misleading were all stated. One participant said "To me, it's either-that you get the message- -it's supposed to be 100% or you're not getting it... If it says 50% or 25% I think that could be confusing or that there would need to be some education on that." In addition, there is a desire for more convenient packaging of whole grain products. It was felt by many foodservice directors that certain types of whole grain bread packages were too small and require extra labor when serving large volumes. This was verbalized by the following response "We use whole grain hamburger buns and hot dog buns, but

you're right-they're in the consumer-sized packages. You know, we're talking eight hot dog buns to a package. Well, when you're doing 500 hot dogs, that's a lot of bags you're ripping up."

### **Distribution/Availability**

The availability of whole grain foods in schools was related to location, size, and distance from distribution hubs. This category contains responses pertaining to availability of products, delivery issues, and incentives for vendors to improve whole grain products. Specifically the participants voiced concern about discrepancies between large and small schools. "I think for a lot of us in here with smaller school districts, that unless you're part of maybe a larger co-op or something, that you can make suggestions, but as far as having them actually manufacture or make something at your request, it just doesn't happen." There was also the perception that in some cases smaller schools receive fewer and lower quality options. "And I'm a small school, so I get all the...the damaged boxes, I don't want this. It's just-it's not right". Another frequently expressed response from the SFP was a desire to convey how creating a demand for specific foods such as whole grain foods in schools can encourage greater retail sales through parent purchases. "When children see that product that they eat in school... they go to the grocery store with their mother or grandma or whoever, "that's what I want." SFP tended to agree that this approach may serve as a mechanism to elicit greater consumption of healthy foods among children at school and at home. However, a major barrier is assuring that there are readily available foods that might help to promote healthy dietary practices among children in small schools and in remote locations.

### **Quality/Cost**

Product quality and cost varied greatly between schools of different size and in different locations. Participants perceived many of the current whole grain products lacked consistency. "But some (products) come in really nice, and those kids will gobble up..." The next time they'll come in, they're a week old and they're crusty, well then nobody wants to eat them." There were also several themes exploring how cost of products affects schools options. "It's going to come down to cost. In our district, I just can't...our budget at this time does not account for spending that much per portion for (whole grain) bread." Respondents also delved into ways of making purchasing whole grain more feasible. One repeatedly expressed idea was to create buying groups to decrease cost and improve quality, "Maybe if a roundtable of us-if we-5 of us-are using Pan of Gold, we get our heads together and go to Pan of Gold and say, "This is what we're looking for in our hamburger bun."

### **Sensory/Adaptation**

Providing products that appeal to kids was shown to be a top concern for SFP. This category contains methods and techniques for adapting whole grains into school lunch programs. Responses repeatedly centered on sensory, timing, and creative preparation methods to increase acceptance. Timing was found to be especially important, "But I think if you start early enough in elementary, just like anything else in the schools, if you present it (whole grain) to them on a daily basis they're going to become accustomed to it." In addition, participants had many different techniques for adapting whole grains. Blending, camouflage, multiple options, and no choice were all expressed as viable ways to adapt whole grains. "Just the appearance alone is enough to scare kids away, but that's what we're here for is to teach them to learn to eat better."

### **Communication/Promotion**

A lack of consistent communication between schools and vendors was strongly voiced among most SFP. There was a view that vendors could do a better job of paying attention to the needs of schools. One food director said, "Vendors need to listen. Help us work out what we need." There was also a desire for greater communication between schools and the industry. "I think having standards out, that we all knew where we were, we could then discuss on the same level with our vendors." The final most frequently occurring theme in this category involves a desire for more promotional tools to encourage whole grain consumption. "We could get more posters, more advertising to put up in the kitchen area promoting whole grains. I like to decorate." Better communication and more promotional tools to adapt whole grains were seen as high priorities by the foodservice directors.

**Table 2. Summary of Topics and Themes**

Topic	Themes
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Standard/Definition	<ul style="list-style-type: none"> <li>• WG* definitions are confusing</li> <li>• Need for simplification of WG* criteria</li> <li>• Conversion between grams and ounces is confusing</li> <li>• Desire for a guarantee from vendors / manufacturers on amount of WG* in product</li> </ul>
Packaging/Labeling	<ul style="list-style-type: none"> <li>• Consumer misconceptions related to WG*</li> <li>• Use of WG* percentage on label is confusing</li> <li>• Clarification of WG ingredients</li> <li>• Increased kitchen labor with smaller WG* packages</li> </ul>
Distribution/Availability	<ul style="list-style-type: none"> <li>• Smaller schools receive lower quantity / quality WG* products</li> <li>• Large schools have more WG* options</li> <li>• Marketing in schools can increase retail sales of WG* products</li> </ul>
Quality/Cost	<ul style="list-style-type: none"> <li>• Consistency of WG* products is poor</li> <li>• Desire for more use of whole grain commodities</li> <li>• Cost of WG* products affects schools selection</li> <li>• Form consortium of schools to increase bargaining power for WG* foods</li> </ul>
Sensory/Adaptation	<ul style="list-style-type: none"> <li>• Schools are looking for ways to adopt whole grain foods</li> <li>• Timing of WG* exposure for kids is important</li> <li>• WG* products need to be appealing to kids</li> </ul>
Communication/Promotion	<ul style="list-style-type: none"> <li>• Vendors need to listen to school needs</li> <li>• The industry needs to work with schools to develop a standard</li> <li>• Foodservice directors would like more WG* promotional tools</li> </ul>

\*WG = Whole grain

## DISCUSSION

The results of this study suggest that some SFP lack the necessary resources and skills to identify, purchase, serve and promote whole grain foods in school foodservice operations. Uncertainty relating to the specific definition of a whole grain food is quite apparent among these directors and managers. Throughout the focus groups it was made clear the government recommendation for whole grain servings may not be fully understood by SFP and makes it difficult for them to purchase grain-based foods with a known amount of whole grain in the product. This would be expected as there is no clear definition of a whole grain food or any major educational programs to assist SFP in their use of whole grain foods in the schools.

Currently, there is no standard definition for whole grain foods that allows for universal use in school foodservice. A working whole grain definition established by A Healthier You requires that a product

consists of 51% of the total flour as whole grains (USDHHS, USDA, 2005b). This definition appears to serve as the basis for determining whether a grain product meets the whole grain definition for use in school meals. For example, a slice of bread must contain half of the flour as whole grain while the remaining flour content would be refined (all-purpose flour). The major issue associated with this definition, as supported by our findings, is that most SFP do not know whether the 50% represents the amount of whole grain flour by the total percent of flour in the product or by the amount of whole grain flour in the total weight of the product. The definition set forth by Healthier You is based on the amount of whole grain flour by the total percent of flour in the product. The Healthier You definition is often misconstrued with the whole grain health claim definition (U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition, 1999), which is defined by the amount of whole grain in the total weight of the product. Thus, at least 51% of the total weight of the product must consist of whole grain flour (ingredients). Another definition set forth for use in school foodservice is 14.75 grams of whole grain per serving (USDA, Food and Nutrition Services, 2001). This is also frequently confused with the USDA definition used for retail products as 16 grams per serving which is considered a full serving of whole grain (USDA and Agriculture Research Services, 1997). A universal definition established by USDA is a critical first step in solidifying foundational goals so that SFP can successfully deliver a known quantity of whole grains and to base their practices for ordering / purchasing, serving and promoting whole grain foods in school cafeterias.

Another urgent point of contention among focus group participants was product labeling. Many whole grain products were viewed as unclear and ambiguously identified on the label. Terms like 50% whole grain, 100% whole grain, multigrain, etc. were often viewed as misleading when compared to the actual ingredient lists. It was felt that action needs to be taken to rectify this. The participants overwhelmingly supported the idea of some type of logo or indicator to certify a product's whole grain status. It was also agreed that any such indicator would need to be clear and easily recognized by SFP. A universal whole grain seal or indicator was also found to be desirable in another study that evaluated responses of health club members (Croy & Marquart, 2005). Most respondents felt identifying a whole grain product was time consuming and overwhelmingly supported this concept. Although there was no data for SFP, according to Britten, Haven, & Davis (2006) confusion about whole grains was a common theme among male and female consumers from all age groups as participants displayed limited understanding of whole-grain foods. Some participants expressed a desire for definitions and information in plain language that could help them make informed decisions and for clear standards that they could trust. These participants are voicing similar issues related to whole grain food definitions, and barriers to identifying whole grain foods as reported by SFP.

Packaging of whole grain products was also seen as a problem. The primary concern with packaging was the insufficient quantity provided in each package. From the responses it was identified that whole grain bread, buns, and other baked goods often come in smaller retail-size units. Most participants felt this was inconvenient, especially in schools where large volumes made opening packaging very time consuming. Although there was a small segment of responses that actually preferred smaller packaging, stating the smaller packages tended to stay fresher longer and increased shelf-life. It would appear that SFP may have some similar expectations for the packaging of whole grain foods as food manufacturers. The food industry perspective may be stated as "The goal of food packaging is to contain food in a cost-effective way that satisfies industry requirements and consumer desires, maintains food safety, and minimizes environmental impact" (Marsh & Bugusu, 2007). Given the early stages of providing whole grain foods in schools there may be a lack of communication between manufacturers and school foodservice directors in terms of packaging expectations. Having the SFP address their concerns directly with manufacturers, vendors, and distributors might be one way to obtain the desired packaging.

Several issues emerged along the food distribution chain, most stemming from discrepancies between large and small school districts. Larger districts were often viewed as having more options, better consistency of products, and generally receiving superior service to what is offered in smaller districts. It is interesting to note that several participants from larger schools felt they had a wide variety of whole grain options and an excellent rapport with their vendors. SFP from smaller schools frequently felt overlooked. The reasons for this are not entirely clear. However, many of the school

foodservice directors with smaller schools in their district were located in remote rural areas. Being farther away from distribution hubs or further down the supply chain could contribute to this either real or perceived impression. It is also conceivable that volume plays a role in delivery quality and availability of products. Schools purchasing greater volumes have been traditionally given higher priority by vendors and distributors.

Foodservice directors also have the responsibility of providing a quality product within budgetary constraints. Cost versus quality was viewed as a constant challenge. The increased price associated with whole grain products was commonly expressed as a barrier for purchasing. SFP often acknowledge price takes precedence over providing the healthiest option. There was a sense of trying to continuously stretch the foodservice dollar to accommodate healthier foods into school meals. A previous study supports the value foodservice directors' place on providing cost effective food options (Conklin, Lambert, & Lambert, 2005). Findings indicated that foodservice directors prefer to use sources that are familiar, cost effective, and easily accessible. The foodservice directors from our study raised the idea of forming bargaining groups or co-ops to strengthen small schools positions and to decrease cost. Formation of these groups could also work in favor of vendors, allowing them to increase efficiency by not having to directly deal with each school individually.

Providing high quality, age specific marketing, combined with reduced price healthy items has been shown to promote positive eating habits (French et al., 2001). A common goal among members of the school foodservice supply chain should be to develop better educational materials for classroom, cafeteria and community use. This is supported by the focus group responses as well as other sources such as the 2005 Whole Grains and Health Summit which stated it as a chief priority (Smith Edge, Miller Jones, & Marquart, 2005). These tools would be excellent supplements for the SFP who have already demonstrated a commitment to adapting whole grain foods into school lunches.

### **Strengths and Limitations**

The Minnesota School Nutrition Association conference provided an opportunity to facilitate focus groups which would otherwise have been difficult to obtain due to geographic location and scheduling conflicts. Even though this was a convenience sample, it provided a fairly diverse cross-sectional representation of Minnesota schools. Included were samples of large and small, metro and rural districts across the state. Another consideration is the extrapolation of results from Minnesota to other states or regions of the country. The sample of directors and managers in Minnesota along with potential differences in socio-economic and environmental conditions could vary from other states. Different laws, regulations, and funding could create very different results. Similarly cultural and demographic differences could also affect how whole grains are perceived in other areas. One final consideration is that distribution channels and food producer's location may play a role. States with more whole grain options and greater availability such as in larger school districts may find that our results vary greatly from their situations.

## **CONCLUSIONS AND APPLICATIONS**

There is a need to set policy and regulatory guidelines to allow clarification regarding a universal definition of whole grain foods for use in school foodservice. This study has further identified the need for greater communication between schools, vendors, manufacturers and governmental agencies. The goal should be to remove confusion surrounding what definitions to use and which standards to follow when ordering whole grain products. Opportunities for education about whole grains within the schools and foodservice operation appear to be a viable option.

The Whole Grains Council is currently allowing the Whole Grain Stamp to be placed on the outer carton of food items that contain a given quantity of whole grain (Oldways Preservation Trust & Whole Grains Council, 2007a). Along with other uses, the Whole Grain Stamp could be used within the vendor ordering system so the foodservice director can establish specifications for whole grains as part of the initial order or bid. This is one opportunity to help identify products for use in school



foodservice that meet at least one-half of a serving (8g stamp) and a full-serving (16g stamp) of whole grain.

The long-term goal of this research is to identify potential opportunities that can help improve communication and develop partnerships among government, industry and school nutrition professionals. Developing working relationships across a variety of disciplines is a prerequisite for the successful delivery of whole grain foods in schools. Directors should have the opportunity to communicate with government officials, manufacturers and vendors to work out a uniform definition and standards for ordering whole grain products for schools. This might be facilitated through a workshop that brings together a unique multidisciplinary team of experts from school foodservice, academia, government, industry and scientific / trade organizations. Directors would like clarification regarding whole grain standards along with a means to establish specifications, which in turn, will improve accuracy and efficiency in ordering whole grain foods. In addition, the outcome of this meeting may be to devise a strategy for establishing a new paradigm regarding the development, delivery and service of whole grain foods in school meals. Ultimately, the food industry has a unique opportunity to help shape the availability and use of healthier, acceptable foods in the school environment. Doing this poses the challenge of developing and delivering grain-based foods lower in calories, rich in whole grain / fiber while maintaining taste appeal with limited contributions from fat, sodium and sugar, all within the current USDA cost structure.

In order to elicit the help of industry, enhanced communication must take place among vendors, distributors and manufacturers along with key players in government, industry and school foodservice. These discussions should be set in the context of rising energy and food-related costs, an escalating prevalence of chronic diseases among children and adults and sky-rocketing health care costs. Future research should examine ways for improving communication and improve the development and implementation of policy and regulatory recommendations.

## APPENDIX

### Semi Structured Focus Group Questions

I. We have provided grain products with varying levels of WG content. Based on your nutrition label for each item, what level of whole grain is necessary in order to label a food whole grain for use in school service?

- a. Do companies clearly define what counts as a WG serving?
- b. How would you clarify or help identify a WG serving for use in school foodservice?

II. Through what distribution channels (vendors) do you receive your whole grain products?

- a. Is the availability of WG foods for school foodservice a concern?
- b. What is the level of communication between manufacturers, vendors and school foodservice?
- c. What can vendors do to improve the delivery of WG's to schools

III. What do manufacturers need to do in order to improve WG foods for use in school foodservice?

- a. Thinking about when you purchase WG foods, what can manufacturers do to make it easier for you to order WG foods for your school meals?
- b. Think about preparation of WG foods, what can manufacturers do to make it easier for you to prepare WG foods for your school meals?
- c. Think about serving of WG foods, what can manufacturers do to make it easier for you to serve WG foods for your school meals?

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