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Sugar In School Breakfasts: A School District's Perspective

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Introduction

For Houston Independent School District (ISD) Nutrition Services, managing the school food operations of the seventh largest school district in the nation can be a great challenge and opportunity. It takes the collaboration of more than 14 departments and 2,400 employees to serve 280,000 meals every day across Houston, one of the largest metropolitan areas in the nation. To be able to create a menu that balances nutrition with student acceptability is an incredible feat. We are consistently trying to provide meals that students will consume while enjoying the health benefits.

A recent series of emails and phone calls from parents concerned about the sugar content of Houston ISD's school breakfasts revealed that a new issue had risen to the surface. Some parents were counting the grams of sugar in our breakfast menus and reported that they believed there was too much sugar to be healthy for children. This prompted us to look closely at the sugar content of our breakfast items and the source of the sugar.

Houston ISD, along with all school districts participating in the National School Lunch and School Breakfast Program, follows a strict set of regulations set forth by the U.S. Department of Agriculture (USDA) under the Healthy Hunger Free Kids Act (HHFKA) of 2010. This Act put in place a new set of nutrition standards and meal patterns for school breakfast and lunch in response to the growing epidemic of childhood obesity in the U.S. The nutrition standards limit calories, saturated fat, and sodium, and ban artificial trans-fat in school meals (see Table 1). HHFKA also made a significant change to the breakfast meal pattern by increasing the fruit minimum from a half cup to one cup and having no requirement for the protein rich meat/meat alternate food group. Additionally, although we have consciously decided not to place specific sweet items on our breakfast menu, the sugar content of our breakfasts is being scrutinized. Ironically, the federal standards do not address the sugar content in school breakfasts. Whether this is an oversight or the authors of the law intentionally did not limit sugar, the result is the same: breakfast meals that are higher in sugar because of the requirement of one cup of fruit, 1 cup of milk (both which have natural sugar). Furthermore, restrictions on fat and the lack of requirement for protein foods result in carbohydrates, including natural sugar, as the main source of calories. Herein, we would like to provide the perspective of a school food service organization concerning sugar in breakfast, and present the

challenges and efforts made to provide students with healthy, well-balanced school breakfasts.

National school lunch program and the school breakfast program background and history

In an effort to describe our viewpoint about the sugar content of our breakfast menus, it is important to provide the reader with the context of the school meal programs history and purpose. School meal nutrition standards, which were initially put in place to assure adequate nutrition for an underfed population of children, have been adapted through the years to meet the current standards that aim to address an overfed, yet undernourished, population of children.

In the early part of the 20th century, individual cities and states had enacted various versions of a school lunch program to improve nutrition and feed needy children. Due to a limit in state and local funds, the federal government stepped in, and in 1946, the 79th legislature enacted the National School Lunch Act. The purpose of the Act was "to safeguard the health and well-being of the Nation's children and…assist the States, in providing an adequate expansion of nonprofit school lunch programs."[1] Lunches served by schools participating in the school lunch program were required to meet minimum nutritional requirements prescribed by the Secretary [of Agriculture] on the basis of tested nutritional research."[1] The aim of these meal patterns was to provide school-aged children with one-third of their daily nutrient requirements. As dietary recommendations evolved with the expansion of nutrition research, various changes were made to the school lunch meal requirements during the subsequent 63 years leading up to the Healthy Hunger Free Kids Act in 2010.

The School Breakfast Program began in 1966 as a pilot-grant program to provide assistance serving breakfast to nutritionally needy children. By 1975, the program was permanently authorized by congress. The breakfast meal pattern was designed to provide one-quarter of the daily nutrient requirements of school-aged children.

Healthy Hunger Free Kids Act of 2010 and USDA Breakfast Meal Pattern

The current Healthy Hunger Free Kids Act (HHFKA) nutrition standards are based on the 2010 U.S. Dietary Guidelines and recommendations made by the Institute of Medicine. The guidelines recommend a balance of calories and physical activity, increased intake of fruits and vegetables,

whole grains, low fat and fat-free dairy, and a reduction in saturated fats, trans fats, sodium, cholesterol and sugar.[2] In addressing sugar in the diet, the U.S. Dietary Guidelines recommend the reduction of added sugar and sugar sweetened beverages without quantifying a recommended amount of total sugar per day. The guidelines point out that a reduction of added sugars would lower calories without compromising the nutritional quality of the diet. The HHFKA breakfast and lunch nutrition standards generally follow the U.S. Dietary Guidelines but fail to address added sugar in foods. Table 1 outlines the USDA meal pattern and nutrition guidelines for school breakfast.[3]

The USDA has strived to improve student health and reduce childhood obesity through HHFKA in 2010; however, there have been numerous challenges in implementing those changes. For example, the recent enforcement of the additional breakfast requirements and how it affects the sugar content in school breakfasts. The current breakfast meal pattern requires a minimum of one full cup of fruit, one full cup of milk, and one ounce whole grain offered each day. In addition, there must be a minimum of four items available for students to select, and three must be chosen, at least one of which is a fruit or vegetable, in order for the cost of that meal to be reimbursed by the federal government. The breakfast items are cumulatively analyzed on a daily and weekly basis to also ensure that the menu is meeting calorie requirements, saturated fat, and sodium restrictions (see Table 1). Of note, there are no requirements for meat or meat alternates in the USDA breakfast meal pattern, meaning that fruit, milk, and grains that provide calories mainly through carbohydrates, are the predominate foods at school breakfast. These regulations can greatly affect the breakfast menus, and in regards to the sugar content, can make it challenging for a school district to minimize added sugar due to calorie minimums, the inability to distinguish added vs. natural sugar, budget constraints, availability and variety of breakfast items, and many other factors described herein.

Table 1 Summary of Current USDA Breakfast Meal Pattern Requirements

USDA Breakfast Meal Pattern						
	K - 5		6-8		9-12	
Components	Amount Per Week	Amount per day	Amount Per Week	Amount per day	Amount Per Week	Amount per day
Fruit	5 cups	1 cup	5 cups	1 cup	5 cups	1 cup
Grains (ounce eq)	7oz	1oz	8 oz	1oz	9oz	1oz
Meat/Meat Alt.*	0	0	0	0	0	0
Milk	5 cups	1 cup	5 cups	1 cup	5 cups	1 cup
Calories (min-max)	350-500 kcal		400-550		450-650	
Sodium (maximum)**	540mg		600mg		570mg	
Saturated Fat (% of calories)	<10%		<10%		<10%	
Trans Fat	Nutrition label or manufacturer specifications must indicate zero grams of trans fat per serving					

* 1oz meat/meat alternate can count toward 1oz grain once daily mimimum grain requirement is met.

** 2014/2015 school year sodium levels. Sodium maximums will have further reductions in 2017/2018 school year and again in 2022/2023 school year.

Houston ISD Nutrition Services Breakfast Program and Challenges in Minimizing Sugar Content

Feeding a population of students, 80% of which are from economically disadvantaged homes, is a significant responsibility. Many of our students receive the majority of their nutrient intake from school meals. Students may receive up to three meals and a snack each day at school. The Houston ISD menus are developed through a collaboration of dietitians, chefs, cost analyst, operations, and production teams.

Breakfast is especially important in providing nutrition and improving academic performance, according to research cited by the Food Research and Action Center.[4] In an effort to improve access to breakfast at Houston ISD, in 2009 we began implementation of a program called *First Class Breakfast* that offers free breakfast to all students at all of our schools. Currently, we serve more than 118,000 students each morning. Serving breakfast in the classroom ensures students have the opportunity to eat breakfast if they did not eat at home. Often parents and school buses drop off students just before the bell rings, making it impossible for students to eat a traditional school breakfast in the cafeteria. In addition, most of the cafeterias are not designed to accommodate service to the entire student body in a single breakfast period. Serving breakfast in the classroom also removes the stigma that school breakfast is exclusively for economically disadvantaged students. Regardless of the roadblocks, we

make every effort to provide one of the most important "school supplies" children need to be successful in school and beyond.

Table 2 Sample HISD Breakfast Menu

Current Straight Serve Menus (K-5)				
Week 1				
Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Oatmeal Bar 18g sugar, 270 calories	Multigrain Oat Cereal 6g sugar, 100 calories	Blueberry Waffles 7g sugar calories	Apple Muffin 15.5g sugar, 199 calories	Chicken Biscuit 8g sugar, 285 calories
Dried Cranberrries 24g sugar, 110 calories	Oatmeal Bar 9g sugar, 140 calories	Peach Cup 16g sugar, 80 calories	Raspberry Yogurt 12g sugar, 80 calories	Banana 16.5g sugar, 121 calories
Fruit Juice Blend 14g sugar, 60 calories	Apple, 15.5g sugar, 77 calories	Fruit Juice Blend 14g sugar, 60 calories	Apple, 15.5g sugar, 77 calories	Fruit Juice Blend 14g sugar, 60 calories
Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories
				Average sugar: 53 grams
				Average Calories: 482
Week 2				
Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Texas Cinnamon Toast 8g sugar, 146 calories	Chicken Biscuit 8g sugar , 285 calories	Frosted Corn Cereal (Red. Sugar) 7g sugar, 100 calories	Maple Pancakes 14g sugar, 230 calories	Beef Kolache 5g sugar, 284 calories
Apple Slices 6g sugar, 30 calories	Dried Cranberries 24g sugar, 110 calories	Oatmeal Bar 9g sugar, 140 calories	Banana 16.5g sugar, 121 calories	Raisins 22g sugar, 113 calories
Fruit Juice Blend 14g sugar, 60 calories	Fruit Juice Blend 14g sugar, 60 calories	Apple 15.5g sugar, 77 calories	Fruit Juice Blend 14g sugar, 60 calories	Fruit Juice Blend 14g sugar, K 60 calories
Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories	Milk 12g sugar, 100 calories
				Average sugar: 50.2 grams
				Average Calories: 475

There are two different methods of breakfast service in Houston ISD schools in accordance with USDA regulations: straight serve and offer vs. serve. With the straight serve method, students must take all foods on the menu. With the offer vs. serve method, students are only required to take three food items, one of which must be a ½ cup of fruit. This means that they do not need to take both fruits offered, nor are they required to take the milk. Adding up all of the grams of sugar on our entire breakfast menu does not give the correct amount of sugar that students would consume in most cases because the students might not select all of the items offered. An example would be if the menu offered pancakes, cereal bar, banana, apple juice and milk. A student could select the pancakes, banana and milk only. Or he/she could choose the cereal bar, banana and apple juice, etc. Offer vs. serve method helps to reduce waste in the

breakfast programs by allowing students the option to select what food they want to eat.

The grams of sugar and calories in the offer vs. serve menu reflect the averages of the foods the students actually choose. As apparent from Table 3, the straight serve menu contains more sugar and calories than the offer vs. serve menu since students are taking all the menu items. It is important to note that for both methods of service the total average calories and grams of sugar are based on what the students received for breakfast, not what they actually consumed. Only a series of tray waste studies would allow us to determine actual sugar intake among our students.

Table 3 Calorie and Sugar Weekly Averages for Breakfast

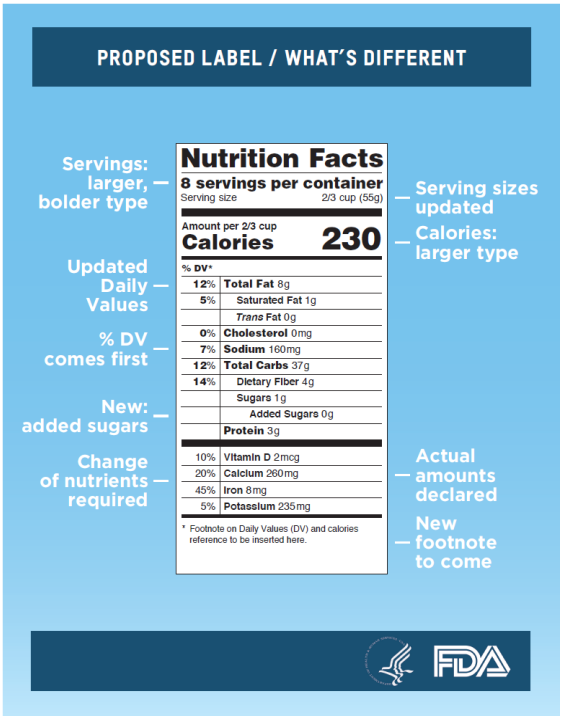
Current Offer Vs. Serve Menu	
Week 1	Week 2
Average Sugar: 44.77 grams	Average Sugar: 43.09 grams
Average Calories: 409	Average Calories: 419

As mentioned previously, the USDA breakfast meal pattern requires fruit, milk, and whole grain to be offered at each breakfast; all are sources of carbohydrates. Federal regulations for the school breakfast program set a range of minimum and maximum number of calories allowed for a Kindergarten-5th grade breakfast at 350-500 calories. The Institute of Medicine recommends 45% of calories come from carbohydrate. In that case, the breakfast would have about 56 grams of carbohydrate. Unfortunately, the federal guidelines for breakfast result in a breakfast meal that has a higher percentage of calories coming from carbohydrate and potentially in the form of sugar.

It is important to mention that the other sources of calories in a meal are protein and fat, but according to the HHFKA Nutrition Standards, there is no requirement for protein in school breakfast and many of the breakfast items offered are required to be low in fat, such as the milk. However, schools may substitute meat/meat alternatives for grain components after the minimum daily grains requirement is met. Due to the lack in requirement for meat/meat alternate items and the typical higher cost of these items, meat/meat alternates are not offered daily. If offered, they are usually categorized as a grain component in order to meet the breakfast meal pattern daily minimums. This results in school breakfast menus that are missing a considerate amount of protein and calories from protein (4 kcal/g) and potentially contain higher amounts of carbohydrates and sugars.

Cumulatively, carbohydrate sources can contribute to the sugar content at breakfast, however, it is important to note the two different types of sugar: natural and added. According to the Dietary Guidelines for Americans, natural sugars are those found in whole foods like fluid milk and milk products (lactose) and fruit (fructose); sugars that are added to foods for preservation, processing, or palatability purposes are called "added sugars." In one school breakfast meal, an average of 37g of total sugar is attributed to natural sugars found in milk and fruit alone. Based on the current information available and data from Table 3, we can estimate 6-16 g of sugar in our menus is derived from added sugar. However, currently the accuracy of the estimated total grams of added sugar cannot be verified due to a lack in label differentiation between the two types of sugar.

Image 1. FDA Proposed Label



One of the significant challenges in controlling the sugar content at breakfast is the ability to analyze the amount of total added sugar in a menu and in individual breakfast items. The U.S. Dietary Guidelines recommend that a person consume no more than 10% of calories from added sugar. However, most nutrition fact labels for foods do not distinguish natural vs. added sugar; it appears only as "sugar" that includes both added and naturally occurring. Currently, the FDA is proposing a new label to solve this issue by requiring manufacturers to list the amount of sugar added during the production process and therefore differentiate the two types of sugar (see Image 1)[5]. In the interim, a lack of nutrition facts label information makes it difficult to distinguish natural from added sugars, and therefore a challenge to reduce total added sugar in school breakfast, despite Houston ISD Nutrition Services' efforts (see Table 2 for menu example).

The USDA School Breakfast Program requirements changed in 2014, increasing fruit servings to a full cup for breakfast. Due to this requirement change we have added juice since many fruits such as a whole banana, equals only half a cup of fruit; instead of giving students two bananas we offer one banana and ½ a cup of juice to meet the requirement. Each half-cup of fruit adds 10 to 15 grams of sugar to the breakfast meal. We offer dried fruit one to two times a week on high school menus for variety and due to high acceptability, adding 22-24 grams in mostly added sugar.

When serving more than 118,000 breakfasts per day with a less than one-dollar budget per breakfast, providing nutritious student accepted items while meeting federal requirements can be arduous. The additional fruit offering results in an additional cost that then takes away from the amount that can be spent on higher quality or more expensive breakfast items. For example, on average most fresh fruit items cost $0.20 for ½ cup, then because 1 cup of fruit must be offered at breakfast, fruit alone can contribute to 50% or more of the total food cost for the entire breakfast meal. Often, lower cost fruit juice is served to meet the fruit requirement, maintain cost constraints, and provide variety to the fruit offerings.

In addition, fruit accessibility and diversity has been a challenge. With the increase in required daily fruit offerings at breakfast in combination with years of drought and environmental issues, many school districts, especially large districts including Houston ISD, have experienced numerous produce shortages and resulted in a lack of selection. We prefer to serve fresh fruit, however we are limited on the variety of whole fruit on the breakfast menu due to our limited budget and narrowed vendor availability. While we do sometimes get fruits from the USDA Foods Commodity program to assist with the cost, we only have them available on a limited basis. In addition, principals have requested that certain fruits, such as whole oranges, not be served in the classrooms for breakfast because they are messy, further limiting the variety of fruit. In many cases, there have been whole fruits that were planned to be served on the breakfast menu but due to crop shortages, inclement weather patterns or price fluctuations, those fruits had to be replaced with canned, dried or juice alternatives. These alternatives can be more easily available or affordable, but at the same time less nutrient dense and/or contain more added sugar for food preservation purposes, functional attributes, and palatability. These barriers combined restrict accessibility and increase budgetary constraints, which unfortunately makes fresh fruit a limited commodity.

Houston ISD Nutrition Services' Efforts to Reduce Sugar Content in Breakfast

With 80% of the Houston ISD population being economically disadvantaged, it is important to us that students consume the food in school in order to get key nutrients they may not be getting outside of school. Albeit at times, there can be many challenges to creating healthy school breakfast meals, Houston ISD Nutrition Services is aware of elevated sugar content and has been making efforts to reduce sugar levels in school breakfasts. Chocolate milk is not offered at breakfast; only skim or low-fat milk is available. Also, we do not offer breakfast sweet rolls or pastries with icing or excessive added sugar, including pastry tarts, cinnamon rolls, donuts, honey buns, etc. We serve whole-grain rich versions of grain items that are lower in sugar, such as reduced-sugar breakfast cereals. Many of the breakfast products that we purchase are actually lower in fat, sodium, and sugar and higher in fiber and complex carbohydrates than their commercial equivalent. We are required to serve whole grains, low fat proteins, low sodium and we strive to serve low sugar products. For example, the Cinnamon Toast Crunch cereal we serve at Houston ISD is whole grain and lower in sugar than the regular version sold in a grocery store. However, our students are familiar with this product so the consumption rate is high. These efforts aid in balancing food flavors with student acceptance so that students are consuming the breakfast items because "it's not nutrition if they don't eat it" according to Registered Dietitian, Dayle Hayes.

Furthermore, Houston ISD Nutrition Services is continually meeting with manufacturers to discuss removing unnecessary additives from their ingredients and improve their products. Many of the manufacturers have responded by eliminating additives such as Mono Sodium Glutamate. We will continue to collaborate with manufacturers and push for reformulation of products to reduce added sugar levels in breakfast items.

Additionally, Houston ISD Nutrition Services makes efforts to control the ingredients in school food by producing in-house, semi-homemade items in our state-of-the-art centralized food production facility. Our research and development chefs and production team create items such as whole-grain-rich beef kolaches, sweet potato spice and apple muffins, and chicken biscuits. With scratch made production items, we can include whole grain, complex carbohydrates and techniques such as using vegetables like sweet potatoes or whole fruits like apples and blueberries, to add flavor and nutrition to our recipes instead of added sugar.

We recognize that whole fruit has more nutritional benefits and fiber than fruit juice and less added sugar than dried fruit so when possible, fresh fruit appears on the breakfast menus. Houston ISD Nutrition Services has made great strides to build relationships with produce vendors and implement processes to aid in procuring more whole fruits and increasing the variety of options offered. We have also begun to participate in programs such as Harvest of the Month and Farm-to-School in which there is a focus on local and seasonal purchasing and nutrition education of fruits and vegetables. These programs have allowed us to increase locally sourced produce, educate students and encourage consumption of fresh fruits. In addition to these efforts, Nutrition Services will be reducing the number of days that juice is offered and dried cranberries will be removed from the elementary menu to further reduce sugar content.

As mentioned previously, there is no USDA requirement for protein, meat or meat alternates. Nutrition Services has committed to increasing the meat and meat alternates to replace grain products when possible by adding items to the menu such as cheese toast, sausage biscuit, breakfast taco, breakfast egg sandwich, etc. This will aid in achieving adequate calories and protein without adding carbohydrates or added sugar.

In an effort to reduce food waste, most of our schools serve breakfast using the “offer vs. serve” method. Since this type of service does not require students to take all items, it helps to reduce overall food waste. Also, throughout the school year, we have conducted informal plate waste studies and taste tests to verify that items are not only healthy but also accepted and consumed by students. We plan to continue these techniques and are currently in the process of formulating a more standardized procedure that will further aid in our ability to create and menu different breakfast items with less added sugar while reducing food waste.

School food service is not just about putting food on a tray. Houston ISD Nutrition Services recognizes the importance of serving school meals to students and the opportunities that lie in shaping their eating behaviors and life-long health. School food is a conduit for nutrition education and is the reason we make every effort to incorporate nutrition messaging into the school cafeteria and beyond. Our nutrition education and community outreach dietitians work with our culinary team to reach out to students and communities to educate on why we serve nutritious foods.

Conclusion

School nutrition programs follow the strict guidelines set forth by the USDA and within that framework of the meal pattern and the nutrition guidelines is a limit to how much the sugar content at breakfast can be decreased. In the solutions outlined above, we strive to reduce added sugars while operating a program within our budgetary constraints and with menu items that the students will consume. Our breakfasts provide nutrition for growing bodies and fuel for the minds of our students so that they can achieve their academic potential and therefore require special consideration and attention.

If the public and parents desire more reduction in the sugar content of breakfast, seeking policy changes at the federal level would be required. These changes could be to require meat/meat alternates, reduction in fruit requirement, and an increase in funding to include more protein items and higher quality products. Parents can impact the nutrition standards by providing feedback during USDA public comment periods for the School Breakfast Program and voicing opinions to local, state, and federal policy makers. Changes in the Nutrition Facts Labels to distinguish added sugars would also aid in our selection of food items with less added sugar for our menus. New labeling could also drive the food industry to reformulate items with less added sugar and develop new savory products with higher protein, adequate calories, and lower sugar content. We will continue to listen to our communities concerns and to seek solutions in order to serve students the most nutritious breakfast meals.

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