The Healthier Options for Public Schoolchildren (HOPS) Study: Dietary Component and Nutritional Analyses

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Purpose/Objective:

School-based interventions, especially rigorous dietary interventions, are necessary to combat the U.S. childhood obesity epidemic. The **Healthier Options for Public Schoolchildren (HOPS) Study** aims to test the feasibility of making rigorous nutritious modifications to school-based breakfast, lunch, and snack offerings in an elementary school setting. The dietary intervention is part of a larger set of interventions that examine the efficacy of an integrated program of dietary offerings, nutrition and lifestyle educational curricula, increased levels of physical activity, and other school-based wellness projects, with the goal of improving the well-being of children in a replicable manner.

Study Design:

The study design includes six public elementary schools (four intervention and two control) located in The School District of Osceola County (OSD), FL, comprised of approximately 4,713 students aged 5-11.

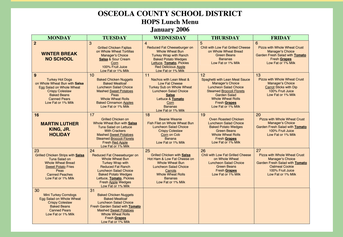
Demographic Information of Participating Schools
Year 2003-2004 Data
[Source: the School District Osceola County]

		Male	Female	White	Black	Hispanic	Ind/Alsk	Asian/ Pac	Multi-Racial	Total
Intervention Schools	Kissimmee Charter Elem	301	320	254	62	241	2	23	39	621
		48.5%	51.5%	40.8%	10.0%	38.8%	0.3%	3.7%	6.3%	
	Mill Creek Elem	493	441	307	132	414	1	15	65	934
		52.8%	47.2%	32.9%	14.1%	44.3%	0.1%	1.6%	7.0%	
	Partin Settlement Elem	434	404	360	57	375	2	7	37	838
		51.8%	48.2%	43.0%	6.8%	44.7%	0.2%	0.8%	4.4%	
	PM Wells Charter Elem	238	247	152	36	255	3	16	23	485
		49.1%	50.9%	31.3%	7.4%	52.6%	0.6%	33.3%	4.7%	
Intervention School Totals		1466	1412	1073	287	1285	8	61	164	2878
		50.9%	49.1%	37.3%	10.0%	44.6%	0.3%	2.1%	5.7%	
Usual Activities Schools	Four Corners Elem (Charter)	363	376	349	35	315	5	15	20	739
		49.1%	50.9%	47.2%	4.7%	42.6%	0.7%	2.0%	2.7%	
	Pleasant Hill Elem	565	531	528	86	408	0	17	57	1096
		51.6%	48.4%	48.2%	7.4%	52.6%	0.6%	3.3%	4.7%	
Usual Activities School Totals		928	907	877	121	723	5	32	77	1835
		50.6%	49.4%	47.8%	6.6%	39.4%	0.3%	1.7%	4.2%	
Grand Totals		**2394**	**2319**	**1950**	**408**	**2008**	**13**	**93**	**241**	**4713**
		50.8%	**49.2%**	**41.3%**	**8.7%**	**42.6%**	**0.3%**	**2.0%**	**5.1%**	

Dietary Intervention:

During HOPS, breakfast, lunch, and snack menus are modified to include more whole grains, less saturated fat, fewer trans-fats, more omega-3 fats, more fresh fruits and vegetables, and less high-fructose corn syrup, while working within the confines of a traditional school budget and using existing food distribution networks. All HOPS menus meet the USDA guidelines for public school food service provision, and, as far as possible, maintain the "spirit" of traditional menus. For example deep fried chicken nuggets are replaced by whole grain-coated baked nuggets which shows students that they can continue to eat foods they like while improving their diet.

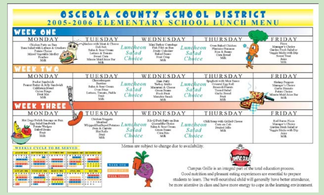
HOPS Lunch Menus



OSCEOLA COUNTY SCHOOL DISTRICT
HOPS Lunch Menu
January 2006

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
2 **WINTER BREAK NO SCHOOL**	Grilled Chicken Fajitas on Whole Wheat Tortillas Manager's Choice Spanish Rice Corn Low Fat or 1% Milk	Redoubled Fat Cheeseburger on Whole Wheat Bun Turkey Wrap with Ranch Dressing Spinach Lettuce, Tomato, Pickles Baked Potato Wedges Low Fat or 1% Milk	Chili with Low Fat Grilled Cheese on Whole Wheat Bread Green Beans Fruit Cup Low Fat or 1% Milk	Pizza with Whole Wheat Crust Manager's Choice Garden Fresh Salad with Tomato Garlic Breadstick Low Fat or 1% Milk
9 Turkey Hot Dogs on Whole Wheat Bun with Salsa Baked Potato Wedges Crispy Cheese Green Beans Canned Pears Low Fat or 1% Milk	Baked Chicken Nuggets Baked Meatloaf Lunchroom Salad Choice Mashed Sweet Potatoes Green Beans Whole Wheat Rolls Fruit Cup Low Fat or 1% Milk	Teachers with Lean Meat & Low Fat Cheese Turkey Sub on Whole Wheat Lunchroom Salad Choice Tomato Lettuce & Tomato Pickles Nachitos Fruit Cup Low Fat or 1% Milk	Spaghetti with Lean Meat Sauce Manager's Choice Garlic Breadstick Lunchroom Salad Choice Steamed Broccoli Whole Wheat Rolls Fruit Cup Low Fat or 1% Milk	Pizza with Whole Wheat Crust Manager's Choice Garden Fresh Salad with Tomato Garlic Breadstick 100% Juice Low Fat or 1% Milk
16 **MARTIN LUTHER KING, JR. HOLIDAY**	Grilled Chicken on Whole Wheat Bun with Salsa Tuna Salad on Lettuce Manager's Choice Mashed Sweet Potatoes Steamed Broccoli Florets Whole Wheat Rolls Low Fat or 1% Milk	Kids Pizza Bagel Bites Corn on Cob Banana Low Fat or 1% Milk	Cheesy Roasted Chicken Manager's Choice Baked Potato Wedges Green Beans Whole Wheat Rolls Fresh Grapes Low Fat or 1% Milk	Pizza with Whole Wheat Crust Manager's Choice Garden Fresh Salad with Tomato Garlic Breadstick Low Fat or 1% Milk
23 Grilled Chicken Strips with Salsa Manager's Choice Sweet Potato Fries Corn Canned Pears Low Fat or 1% Milk	Reduced Fat Cheeseburger on Whole Wheat Bun Turkey Wrap with Reduced Fat Ranch Dressing Spinach Lettuce, Tomato, Pickles Baked Potato Wedges Fresh Apple Wedges Low Fat or 1% Milk	Grilled Chicken with Salsa Manager's Choice Whole Wheat Bun Lunchroom Salad Choice Tomato Whole Wheat Rolls Fruit Cup Low Fat or 1% Milk	Chili with Low Fat Grilled Cheese on Whole Wheat Bread Green Beans Fruit Cup Low Fat or 1% Milk	Pizza with Whole Wheat Crust Manager's Choice Garden Fresh Salad with Tomato Garlic Breadstick Oatmeal Cookie 100% Juice Low Fat or 1% Milk
30 Mini Turkey Corndogs Egg Salad on Whole Wheat Crispy Cheese Green Beans Canned Pears Low Fat or 1% Milk	Baked Chicken Nuggets Baked Meatloaf Lunchroom Salad Choice Mashed Sweet Potatoes Whole Wheat Rolls Fresh Grapes Low Fat or 1% Milk	Teachers with Lean Meat & Low Fat Cheese Turkey Sub on Whole Wheat Lunchroom Salad Choice Tomato Lettuce & Tomato Pickles Nachitos Fruit Cup Low Fat or 1% Milk	Spaghetti with Lean Meat Sauce Manager's Choice Garlic Breadstick Lunchroom Salad Choice Steamed Broccoli Whole Wheat Rolls Fruit Cup Low Fat or 1% Milk	Pizza with Whole Wheat Crust Manager's Choice Garden Fresh Salad with Tomato Garlic Breadstick 100% Juice Low Fat or 1% Milk

OSD Lunch Menu (Control Menu)



OSCEOLA COUNTY SCHOOL DISTRICT
2005-2006 ELEMENTARY SCHOOL LUNCH MENU

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
WEEK ONE	Pizza Bagel Bites Fruit Cup Green Beans Milk	Grilled Cheese Sandwich Tomato Soup Fruit Cup Milk	Lunchroom Salad Choice	Lunchroom Salad Choice	Lunchroom Salad Choice
WEEK TWO	Pizza Bagel Bites Fruit Cup Green Beans Milk	Baked Chicken Nuggets Mashed Potatoes Fruit Cup Milk	Lunchroom Salad Choice	Lunchroom Salad Choice	Lunchroom Salad Choice
WEEK THREE	Pizza Bagel Bites Fruit Cup Green Beans Milk	Grilled Cheese Sandwich Tomato Soup Fruit Cup Milk	Lunchroom Salad Choice	Lunchroom Salad Choice	Lunchroom Salad Choice

WEEKLY CYCLE FOR SERVICE

WEEK ONE	WEEK TWO	WEEK THREE	WEEK FOUR	WEEK FIVE

Menus are subject to change due to availability.

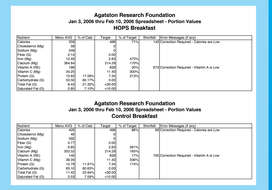
Entrepreneur Grille is an integral part of the total education process.
Our goal is healthy, nutritious and pleasant eating experiences are important to our students.
Students at Jones / The Well recreational child will generally have better attendance, be more attentive in class and have more energy to spend on the learning environment.

Methodology:

Nutritional analyses were conducted using Nutrikids software on six weeks (January and first two weeks of February 2006) of HOPS menus and OSD menus with the goal of assessing key nutritional differences between the two types of menus.

Results – Breakfast:

Fats – The amounts of total fat and saturated fat were much less in HOPS breakfasts as compared to control breakfasts. Specifically, HOPS breakfasts contained 26.2% less total fat and 20.70% less saturated fat.



Agatston Research Foundation
Jan 3, 2006 thru Feb 10, 2006 Spreadsheet - Portion Values
HOPS Breakfast

Nutrient	Menu Avg	% of Calc	Target	% of Target	Shortfall	Error Messages (if any)
Calories	526		525			Correction Required - Calories are Low
Cholesterol (Mg)	98		0			
Cholesterol (%)	16.7%		0%			
Sodium (Mg)	1125		0			
Fiber (G)	12.43		0.63	473%		
Iron (Mg)	10.45		14.00	75%		
Vitamin A (IU)	1485		400	371%		
Vitamin C (Mg)	34.20		12.45	275%		
Vitamin E (IU)	6.52	17.09%	4.00	163%		
Carbohydrate (G)	93.42	70.17%	65.00			
Protein (G)	15.12	11.35%	14.00			
Saturated Fat (G)	2.82	1.19%	<10.00			

Agatston Research Foundation
Jan 3, 2006 thru Feb 10, 2006 Spreadsheet - Portion Values
Control Breakfast

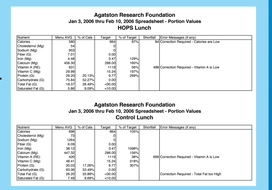
Nutrient	Menu Avg	% of Calc	Target	% of Target	Shortfall	Error Messages (if any)
Calories	456		525			Correction Required - Calories are Low
Cholesterol (Mg)	98		0			
Cholesterol (%)	21.5%		0%			
Sodium (Mg)	925		0			
Fiber (G)	0.77		0.63			
Iron (Mg)	8.45		14.00	60%		
Calcium (Mg)	503.00		314.00	160%		
Vitamin A (IU)	1400		400	350%		
Vitamin C (Mg)	18.90		12.45	152%		
Vitamin E (IU)	15.10	11.91%	4.00	378%		
Protein (G)	15.10	11.91%	14.00	108%		
Carbohydrate (G)	60.00	49.85%				
Total Fat (G)	11.42	23.84%	<20.00			
Saturated Fat (G)	5.02	7.94%	<10.00			

Dietary Fiber – HOPS breakfasts contained, on average, approximately 2.8 times more dietary fiber than control breakfasts (2.14 g versus 0.77 grams respectively).

Other Nutrition Values – Both breakfast menus were under-caloric based on the USDA standards for schools participating in the National School Lunch Program. Specifically, the HOPS breakfast menu, which included much lower amounts of fats than control breakfasts, resulted in a caloric shortfall of approximately 143 calories per day, and the control menus was under-caloric by 69 calories.

Results – Lunch:

Fats – The amounts of total fat and saturated fat were much less in HOPS lunches as compared to control lunches. Specifically, HOPS lunches contained 29.9% less total fat and 21.8% less saturated fat.



Agatston Research Foundation
Jan 3, 2006 thru Feb 10, 2006 Spreadsheet - Portion Values
HOPS Lunch

Nutrient	Menu Avg	% of Calc	Target	% of Target	Shortfall	Error Messages (if any)
Calories	525		525			Correction Required - Calories are Low
Cholesterol (Mg)	98		0			
Cholesterol (%)	16.7%		0%			
Sodium (Mg)	859		0			
Fiber (G)	7.01		0.63	1,126%		
Iron (Mg)	4.48		14.00	32%		
Vitamin A (IU)	1,485		400	371%		
Vitamin C (Mg)	60.0		12.45	482%		
Vitamin E (IU)	6.52	10.19%	4.00	163%		
Protein (G)	29.45	22.12%	14.00	210%		
Carbohydrate (G)	75.84	52.27%	65.00			
Total Fat (G)	18.00	30.94%	<20.00			
Saturated Fat (G)	5.85	9.04%	<10.00			

Dietary Fiber – HOPS lunches contained, on average, approximately 1.15 times more dietary fiber than control lunches (7.01 g versus 6.09 g respectively).

Agatston Research Foundation
Jan 3, 2006 thru Feb 10, 2006 Spreadsheet - Portion Values
Control Lunch

Nutrient	Menu Avg	% of Calc	Target	% of Target	Shortfall	Error Messages (if any)
Calories	525		525			
Cholesterol (Mg)	19		0			
Cholesterol (%)	3.6%		0%			
Fiber (G)	0.63		0.63			
Iron (Mg)	18.12		9.41	1926%		
Vitamin A (IU)	400		400	100%		
Vitamin E (IU)	4.00	11.19%	4.00	99%		
Vitamin C (Mg)	12.45		12.45	100%		
Protein (G)	30.00	17.09%	9.41	319%		
Carbohydrate (G)	65.00	49.71%	65.00			
Total Fat (G)	35.20	59.84%	<20.00			Correction Required - Total Fat too High
Saturated Fat (G)	7.40	9.68%	<10.00			

Other Nutrition Values – Based on the USDA standards for schools participating in the National School Lunch Program, HOPS lunches, which included much lower amounts of fats, resulted in a caloric shortfall of approximately 84 calories per day, and control lunches were slightly high with respect to total fat.

Conclusions:

Making simple, subtle changes to ingredients used when preparing school meals for elementary-aged children results in lower total and lower saturated fat levels and higher amounts of fiber, while only minimally affecting daily caloric amounts. Simple changes implemented during HOPS included the substitution of lower fat meat alternatives such as:

Breakfast

- Turkey Canadian bacon for pork sausage
- Turkey sausage for pork sausage
- Reduced fat cheese for full fat, regular cheese
- Whole wheat bread for biscuits, honeybuns, donuts, banana mini loafs, pancakes, and French toast sticks

Lunch

- Lean ham for canned ham patty
- Turkey hot dogs for beef hot dogs. Lower fat corn dogs (containing a whole-grain coating) for full fat corn dogs
- Reduced fat cheese for full fat, regular cheese
- Reduced fat cheese pizza for full fat, regular pizza

Simple changes implemented during HOPS to achieve higher levels of fiber included:

Breakfast

- Daily servings of whole grain breads and high-fiber cold cereals in place of white/refined flour breads and high-sugar/low-fiber cereals
- Servings of whole grain breaded chicken nuggets instead of white/refined flour breaded chicken nuggets

Lunch

- More frequent servings of whole, fresh fruits instead of canned fruits
- More frequent servings of salads and vegetables
- Daily servings of whole grain breads
- Serving only whole grain pizza, corn dogs with whole grain coating, and chicken nuggets with whole grain breading

Caloric shortfalls due to HOPS dietary changes to lunch menus can be corrected easily by adding an additional serving from the grain/bread group and/or an extra serving of a fruit or vegetable.

HOPS OSD Dietary Team

Dr. John Beall	*Assistant Superintendent*	Carla Wilkins	*Cafeteria Manager, Mill Creek Elementary & Kissimmee Charter Academy*
Jean Palmore	*Director, Campus Grill*		
Karen Fry	*Supervisor, Campus Grill*	Paula Scroggins	*Cafeteria Manager, Partin Settlement Elementary & PM Wells Charter Elementary*
Nancy Shetters	*Supervisor, Campus Grill*		