



Middle School Student Lunch Consumption Impact of National School Lunch Program Meal and Competitive Foods

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On an average school day, over 28 million children consume a lunch provided through the USDA National School Lunch Program (NSLP). In many schools, children also have the opportunity to purchase foods not subsidized by the NSLP and not subject to its nutritional standards. These “competitive foods” can be sold through snack bars, a la carte purchase in the cafeteria lunch line, vending machines, and other locations, according to the local school policy. In 2000, 74 percent of middle schools had at least one location at which “competitive foods or beverages” could be purchased. Because of the impact of school meals on children’s dietary intakes, attention has recently focused on

the potential effects of these “competitive foods” on the quantity and quality of lunchtime food consumption. Previous research suggests that access to snack bars, a la carte meals and vending machines, which begins for many students in middle school, has a negative impact on NSLP participation and student diets.

To assess the impacts of the National School Lunch Program (NSLP) meal and competitive foods on children’s diets, data was collected from lunchtime food records from students in three Houston area middle schools during school year 2001-2, with information on the source of each item consumed: NSLP, vending, snack bar, home, and other. Lunchtime consumption of nutrients and servings of fruit/juice, vegetables, high fat vegetables, milk, total sweetened beverages, soft drinks, candy, cakes/cookies, and snack chips was measured. Group differences in consumption were tested between for two student groups: those consuming more than the median of total calories from the NSLP lunch (Group 1, “mainly NSLP”), and those with less than the median of total calories from NSLP (Group 2, “mainly non-NSLP”).

The results provide evidence of some beneficial impacts of NSLP participation as well as areas of concern associated with participation. Students in Group 1, “mainly NSLP,” reported higher consumption of Vitamins A and C, iron, and calcium, milk, fruit and vegetables, all nutrients and foods which are under-consumed by school children, than Group 2 “mainly non-NSLP”. Group 1 also had lower intakes of sweetened beverages and candy than students in Group 2.

Fat, saturated fat, and sodium consumption were higher for Group 1, however, and exceeded USDA NSLP meal guidelines. Substituting lower saturated fat selections like skim and 1% milk would be an important food service strategy to reduce saturated fat intake, since whole and 2% milk accounted for 49% of the milk consumption among the students in these three middle schools. In addition, more attention to lower fat and sodium entrees and food preparation techniques could also lower meal fat and sodium content.

Energy intake was also higher for Group 1, although it was only 80 percent of the NSLP requirement for calories served at lunch. While fruit and vegetable consumption was higher for Group 1 than Group 2, the results show the potential for improvement. Fruit and vegetable consumption by Group 1 was about one serving per lunch, not counting high fat vegetables, while the school menus listed two servings of fruit and vegetables on the menu daily. More research is needed to fully understand how to encourage FV consumption at school. While not national in scope, this study provided detailed data on sources of foods eaten at school and their contributions to nutrient and food group intake. The results provide updated evidence that while the NSLP lunch provides nutrients and food groups that are under-consumed by children, fat and saturated fat content remains a concern, even with the 1995 School Meal Initiative efforts to reduce fat and saturated fat intake.

Table 1. Daily lunch consumption per student stratified by consumption above (Group 1) or below (Group 2) the median split of total kilocalories (kcal) consumed from the National School Lunch Program (57%)

N=24 NSLP Guidelines	Group 1 N=24 ₁	Group 2
	Mean (SD) ₂	Mean (SD)
Nutrients		
Kcals 509 (99) ~825	** 666 (76)	
Protein (g)	** 28.2 (3.6)	
	13.9 (5.6)	16
Fat (g) **	29.6 (3.3)	
	19.7 (4.2)	
% kcal from fat	40 (5)	Ö80
	35 (7)	
Sat. Fat A (g)	** 10.6 (2)	
	6.3 (1) -	
% kcal from saturated fat	14 (2)	
	11 (2)	<10
Fiber (g) **	4.7 (1.1)	
2.4 (0.6) -		
Vitamin A (RE) **	224.8 (54.9)	
	66 (37.5)	300
Vitamin C (mg) **	19.8 (5.8)	
	7.1 (3.9)	18
Iron (mg) **	4 (0.6)	2.5
(0.9) 4.5		
Calcium (mg) **	400 (98)	
	154 (53)	400
Sodium (mg) **	1195 (201)	
	718 (180)	Ö800 ₃
Servings		
Fruit/Juice **	0.60 (0.42)	
	0.07 (0.07)	
Vegetables **	0.47 (0.26)	
	0.12 (0.19)	
High fat vegetables	0.06 (0.13)	
	0.05 (0.15)	
Milk (oz) **	4.37 (2.08)	
	0.79 (1.13)	8

ounces		
Sweet Beverages (oz) **	0.62 (0.69) 7.32 (3.84)	
Sweet Soft Drink (oz) **	0.30 (0.46) 6.15 (3.53)	
Candy **	0.01 (0.02) 0.16 (0.13)	
Cakes, cookies, etc. *	0.03 (0.04)	0.13 (0.15)
Snack Chips **	0.04 (0.05) 0.36 (0.23)	
*p<.01, and **p<.001;		
1 Number of aggregated weeks 2 Standard Deviations 3 While there is currently no specific NSLP nutrient standard for sodium, the National Research Council's recommendation is < 2400 per day; one-third of this limit for the lunch meal would be 800 mg.		

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If you are interested in becoming involved with nutrition in Missoula County Public Schools, please contact Corey Campbell at 406-258-3827 or e-mail at campbellc@ho.missoula.mt.us