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BACKGROUND

Recommendation

- Childcare center is an ideal place for developing healthy eating habits in early childhood.
- According to USDA MyPlate recommendations, young children should consume healthy foods from different food groups.

Why is children's dietary intake important?

- Nebraska ranks 5th in childhood obesity.
- High consumption of calories and low consumption of fruits and vegetables increases risk of childhood obesity.
- No study has been done in Nebraska childcare centers to determine if children are meeting nutritional recommendations.

Early childhood is the formative developmental period for healthy eating habits.

STUDY OBJECTIVES

- To compare children's (3-5 years) food consumption during lunch at childcare centers relative to the MyPlate recommendations.
- To assess micronutrient and dietary fiber intake of children (3-5 years) in childcare centers.

METHODS

Design

- Convenience sampling design.
- Children ages 3 to 5 years (n=67) enrolled in childcare centers (n=2) participating USDA's Child and Adult Care Food Program (CACFP).

Data Collection

Dietary intake of children was measured through observation by Dietary observation at childcare center (DOCC) method.

DOCC Method

- The data collectors received 8 hours of training, lab and field certification for this method.
- The reliability between observers across foods was high (ICC= 0.989, $P < .001$).
- Each data collectors observed 3 children at lunch for 2 days using DOCC.
- Recipes or brand names of foods were enquired from the kitchen staff/s for accurate reporting of nutrient composition of foods.

Data Analysis

Food Processor® SQL

- To assess foods consumed from each food groups, total calorie intake and nutrient density for vitamin A and dietary fiber.

One-sample t-tests

- To determine the mean differences in each food group and total calorie consumed comparing to the 1/3rd proportion of MyPlate daily recommendation, using SPSS v. 24.
- Vitamin A and dietary fiber consumption were compared with 1/3 proportion of age specific 2015-2020 Dietary guidelines for Americans.

RESULTS

Table 1: Demographic information of children (n=67)

Participant Characteristics	%
Gender	
Male	37.7
Female	62.3
Ethnicity	
White	80.9
Black or African American	4.4
Asian	2.9
Hispanic	1.5
Mixed Hispanic/White	5.9
Mixed White/Black	2.9
Mixed White/Asian	1.5
	Mean/SD^b
Age^a	4.065/.752

^aMinimum Age: 2.08, Maximum Age: 5.75.

^bStandard Deviation

Table 2: Food served in the childcare centers classified by MyPlate food groups.

MyPlate food groups	Food served in Childcare center
Grain	Whole wheat bread, whole wheat bun, whole grain biscuits, whole wheat pasta, macaroni, whole grain tortilla.
Vegetable	Corn, hash brown, fresh bell pepper strips, boiled green beans, broccoli florets, mixed vegetables (peas, beans, carrots), canned beans.
Fruit	Canned oranges in light syrup, canned mixed tropical fruits in light syrup, fresh strawberries, fresh mixed fruit salad, fresh pineapple, fresh cantaloupe, canned peaches in light syrup, fresh Banana.
Dairy	Cheese slices, 1% milk unflavored milk.
Protein	Scrambled egg, sausage gravy, ham slices, turkey slices, burger, rotisserie chicken, beef crumbles.

Table 3: Amount of food consumed from each food groups by children compared to MyPlate recommendation.

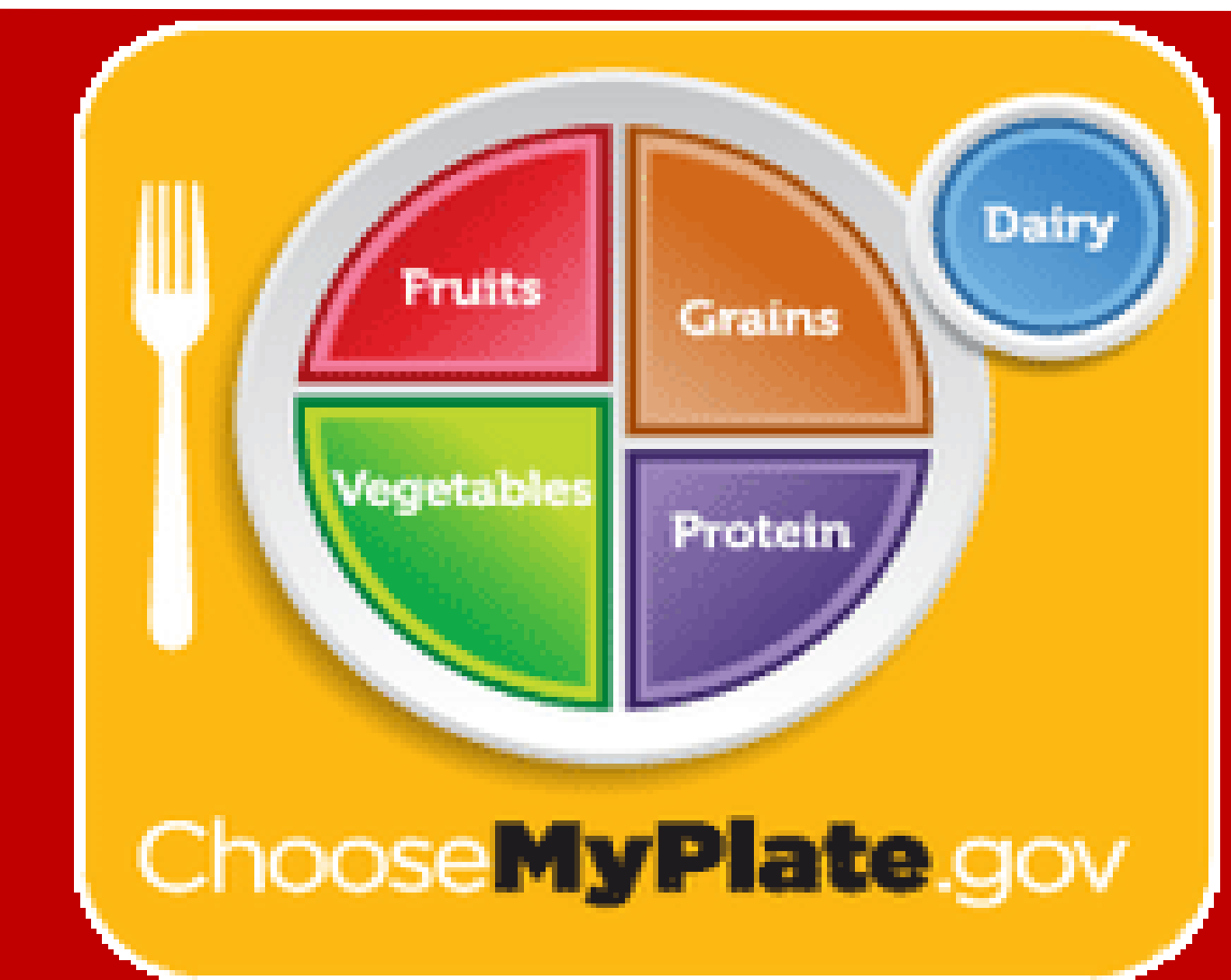
Food Groups	MyPlate recommendation/day (age 3-5 years old, light physical activity)	1/3 proportion of MyPlate recommendation ^c	Amount consumed in current study		
			Mean	SD	P-value
Grain	5 oz	1.67	1.13	1.07	<.001*
Vegetable	1.5 cup	0.5	0.21	.52	<.001*
Fruit	1.5 cup	0.5	.20	.14	<.001*
Dairy	2 cup	0.67	.69	.39	0.675
Protein	4 oz	1.33	1.20	1.56	0.5
Calorie	1400	466.67	356.52	149.63	<.001*

^cOne meal was observed; hence the recommended amounts were divided by 3.

*Significant mean differences $p < .05$

Table 4: Vitamin A and dietary fiber consumption by children compared to 2015-2020 dietary guidelines.

Nutrient	Required amount/day (age 3-5 years old, light physical activity)	1/3 proportion of required amount (age 3-5 years old, light physical activity)	Mean amount consumed (SD)	P-value
Dietary Fiber, g	19.6g	6.53	3.11 (2.59)	<.001*
Vitamin A, mg (Retinol Activity Equivalents)	400	133.33	0.042 (0.03)	<.001*



RESULTS

Food served

- The food served meets the CACFP requirements for the five food groups.

Food consumed

- Children are not meeting their age appropriate nutrition requirement for calories, fruits, vegetables, and grains.
- The dietary fiber and vitamin A intake are significantly lower than the recommended amount.

DISCUSSION

Implications for Research

- Further studies are warranted to clarify the reasons why children's consumption are not meeting recommended standards.
- Considering the high standard for participating in CACFP, future studies can also explore comparing these findings to non-CACFP participating programs.

Implications for Policy

- Childcare centers are meeting guidelines for CACFP by serving foods from different food groups.
- However, children are not consuming enough grains, fruits and vegetables.**
- Research shows that Family Style Dining helps in developing healthy dietary intake, therefore it can be a requirement in the policy.

Implications for Programs and Practices

- Professional program development training for providers are needed for employing:
 - Responsive feeding practices
 - Structured mealtime environment
- Making food more appealing and providing dip with vegetables could be some ways to improve children's dietary consumption.

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