DIFFERENCES IN DIETS OF MOTHERS OF PRESCHOOL CHILDREN FROM TWO INCOME GROUPS

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INTRODUCTION

Studies concerning family influences on the dietary patterns of young children provide a basis for educators in the development of effective programs for better nutrition. The family, and mothers in particular, affect children's dietary practices, directly through the provision of food and indirectly through influences on attitudes and preferences for food. Food preferences established early in life are likely to continue throughout the life span.

The purpose of this study was to determine differences in food consumption patterns of mothers of preschool children from two income groups. Specific objectives were to:

1. Determine differences in nutrient intake of mothers of preschool children from low (LI) and middle income (MI) families.
2. Determine differences in food consumption patterns of mothers from two income groups.
3. Determine relationships between food intake of mothers and reported consumption of food by their preschool children.

METHODS

The subjects were mothers of pre-school children enrolled in area preschool programs. Two groups of mothers representing low income (LI) and middle income (MI) families were selected for the study. A total of 36 mothers participated in the study, 13 represented the LI group and 23 represented the MI group.

The questionnaire was designed to be self-administered. However, subjects were informed to contact investigators for assistance, if needed, in completing the questionnaires. A family inventory, questions on family income, and food and nutrition practices of the mother were included in the questionnaire. In addition, a food frequency section, adapted from diet history questionnaires used in several studies in Georgia (1,2) was included. Mothers were likewise asked to report on their child's frequency of consumption of eight food groups including milk and cheese, vegetables, fruit, meat, eggs, breads and cereals, and desserts and snacks.

Nutrient Intakes and core diets (3) and statistical evaluations were performed with the aid of published (4) microcomputer programs. Pearson product correlation coefficients between food intakes of mothers and reported consumption of eight food groups by children were determined (5).

RESULTS

Mothers in the MI group were predominantly (95%) white, while those in the LI group were predominantly (63%) black. The MI mothers had a significantly higher ($P < 0.01$) average age of 33 years than the LI mothers who had an average age of 29 years. Education of mothers from the MI group was significantly higher ($P < 0.001$) than that from the LI group. The MI mothers either had some college education or a college degree while LI mothers either had some high school education, or completed high school. The mean annual family income of the MI mothers was in the $20,000 - $29,000 range while that in the LI group was under $9,999. The difference in income was significant at the $P < 0.0001$ level.

Table 1 shows the computed intake of most major nutrients by the LI and MI mothers. Mean values are given for both groups with a pooled estimate of the standard deviation. No major differences were found in the nutrient intake of mothers in the two groups. Only fiber intake was found to be significantly higher in diets of mothers from the MI group, while selenium was higher in the LI group. The nutrient intakes found in this study are within the range of values reported by Caster et al. (2) on diets of mothers of children used as the control group in studies conducted in Georgia.

TABLE 1
Differences Between Nutrient Intakes of Mothers of Preschool From Low (LI) and Middle Income (MI) Groups.

Food	Nutrient Intake LI	MI	Standard Deviation	t-test
Energy (Kcal)	2420	2190	842	.81
Protein (g)	92	78	38	1.05
Lipid (g)	113	93	46	1.27
Fiber (g)	4.0	5.8	2.7	2.00*
Sugar (g)	140	125	47.6	.91
Calcium (mg)	811	903	452	.59
Sodium (g)	3.7	3.3	1.6	.69
Iron (mg)	11.9	11.4	5.0	.29
Copper (mg)	2.4	1.9	1.3	1.03
Zinc (mg)	12.6	11.8	5.2	.49
Selenium (mcg)	28.3	18.0	14.1	2.09*
Vit C (mg)	123	131	81	.28
Vit B-1 (mg)	1.5	1.4	.79	.23
Vit B-6 (mg)	2.6	2.4	1.4	.45
Folate (ug)	221	246	111	.66
Vit A (I. U.)	14700	18000	14200	.59

*$0.05 > P > 0.01$

Average daily energy intake calculated from diets of the 36 mothers was 2270 Kcalories, with 39.8% of energy from fat and 14.5% from protein. Sugar provided 51% of the 260 g of carbohydrate in the diet. Cholesterol intake was 404 mg. Average daily intake of folacin, pantothenate, magnesium, iron, zinc, manganese and selenium were lower than the recommended dietary allowances (6) for these nutrients.

While microcomputer nutrient analysis of mothers' diets, indicated no differences between groups, major differences were found in the food consumption patterns of mothers in the two groups. A list of the food consumed by the LI mothers in quantities significantly different from that of the MI mothers is shown in Table 2. Low income mothers consumed more liver and organ meats, and cured meats in the form of sausage, bacon and frankfurters. Chicken was consumed by LI mothers in fried form as opposed to the stewed forms consumed by MI mothers. Among the vegetables listed in the questionnaire, more beets or turnips, corn and okra were consumed by low income mothers, while middle income mothers ate more vegetable casseroles, lettuce salad and tomatoes. In addition, more cottage cheese,and vegetable oils and mayonnaise were consumed by MI mothers. More cornbread and corn grits were consumed by the low income mothers. Low income mothers consumed more white bread, while more dark breads were consumed by middle income mothers. Pudding and grapefruit were also consumed in greater quantities by the LI mothers.

TABLE 2
Differences Between Diets of Mothers of Preschool Children From Low (LI) and Middle Income (MI) Groups.

Food	Food Intake (g) Difference of LI from MI	Standard Deviation	t-test
Coffee	106 -143	178	2.31*
Liver/Organ Meat	13 12	16	2.03*
Sausage	20 17	13	3.79**
Bacon	6 4	5	2.35*
Chicken, Stewed	8 -15	17	2.57*
Chicken, Fried	32 28	26	3.07**
Luncheon Meats	14 8	11	2.18*
Hot Dogs/Frankfurters	10 5	6	2.38*
Cottage cheese	2 -17	22	2.16*
Grapefruit	44 35	34	2.93**
Beets/Turnips	12 10	12	2.46*
Corn	20 8	8	2.83**
Lettuce Salad	14 -26	21	3.51**
Tomato	13 -27	30	2.51*
Cornbread	35 28	22	3.72***

continued

TABLE 2 (continued)

Food	Food Intake (g) Difference of LI from MI	Standard Deviation	t-test
Bread, White	51	32	29	3.20**
Bread, Dark	6	-23	23	2.85**
Corn Grits	24	16	16	2.89**
Vegetable Casserole	2	-35	33	3.04**
Pudding	15	11	15	2.13*
Margarine	38	21	27	2.25*
Vegetable Oil/Mayonnaise	4	-4	4	2.85**
Port Fat	1.3	0.8	0.9	2.61*
Okra	19	14	20	2.00*

*0.05 > P > 0.01
**P < 0.01
***P < 0.001

Foods that contributed up to 50% of the energy intake of both groups of mothers are ranked in Table 3, along with percent contribution. Only 12 foods contributed to 50% of the energy intake of the LI mothers while 15 foods contributed to that of the MI mothers. Margarine provided the greatest energy contribution in diets of mothers in both LI and MI groups, but while it contributed 10.7 percent of the energy intake of LI mothers, it provided only 5.8 percent of the energy intake of MI mothers. The second to the fifth ranked foods of the MI mothers appeared to consist of more nutrient dense foods such as cheese, peanuts and peanut butter, cold cereals and milk, while that of the LI mothers consisted of white bread, soft drinks, lemonade or punch, and sugar which appear to be more calorie dense foods.

Intake of sugars was not significantly different for the two groups. For both groups, soft drinks, lemonade or punch and sugar were the three items that made the greatest percentage contribution to dietary sugars. The main difference was that in the LI mothers group, these three foods contributed 58.3 percent of sugars in the diet while in the MI group, these contributed only 34.6% of the sugars in the diet.

One of two differences between diets of LI and MI mothers was fiber intake. Only 8 foods in the MI mothers diet contributed 50 percent of the fiber in the diet while in the LI mothers diets 12 foods contributed to 50 percent of the fiber. Table 3 ranks the foods that contribute to 50 percent of the fiber in diets of mothers from LI and MI families. The percent contribution of each food to the fiber intake is likewise listed. Corn and vegetable casseroles provided the greatest contribution of fiber to the diets of LI and MI mothers, respectively. Apples and dried beans and peas contributed substantially to diets of both groups of mothers.

TABLE 3
Foods Ranked According to Percent Contribution to Energy Intake.

Food	Rank LI	%	MI	%
Margarine	1	10.7	1	5.8
Bread, White	2	5.4	13	2.4
Soft Drinks	3	5.2	12	2.8
Lemonade/Punch	4	5.0		
Sugar	5	4.7	11	2.8
Chicken, Fried	6	3.1		
Ice Cream/Milk	7	2.8		
Sausage	8	2.8		
Cornbread	9	2.7		
Milk (Skim)	10	2.7	5	3.5
Peanuts/Peanut Butter	11	2.3	3	4.1
Cheese	12	2.3	2	5.3
Cereals, Cold	–		4	4.0
Cookies/Cake	–		6	3.2
Bread, Dark	–		7	3.2
Vegetable Oil/Mayonnaise	–		8	3.1
Chicken, Stewed	–		9	3.0
Butter	–		10	3.0
Biscuit/Rolls	–		14	2.1
Egg	–		15	2.1
TOTAL		50.0		50.4

TABLE 4
Foods Ranked According to Percent Contribution to Fiber Intake.

Food	Rank LI	%	MI	%
Corn	1	6.5	–	
Apples/Applesauce	2	6.5	2	8.2
Dried Peas/Beans	3	5.6	3	8.1
Okra	4	4.5	–	
Cornbread	5	4.4	–	
Peas, Green	6	4.0	–	
Peanuts/Peanut Butter	7	4.0	8	4.0
Peaches	8	4.0	6	5.3

continued

TABLE 4 (continued)

Food	Rank LI	%	MI	%
Banana	9	3.2	-	
Carrots	10	3.1	5	5.5
Cabbage/Slaw	11	3.1	-	
Melons	12	2.7	-	
Vegetable Casserole	-		1	8.2
Bread, Dark	-		4	8.0
Broccoli	-		7	4.2
TOTAL		51.3		51.3

The children's frequency of consumption of 8 groups of food as reported by their mothers are listed in Table 5. Significant differences between the LI and the MI groups were found in the children's reported consumption of milk and cheese ($P < 0.02$), fruit ($P < 0.05$) and breads and cereal ($P < 0.01$). Preschool children from the MI groups consumed more milk and cheese, fruit, and breads and cereals than those in the LI group. The reported consumption of vegetables, meat, eggs, desserts and snacks was not different in the two groups.

TABLE 5
Reported Frequency of Consumption of Food by Children from Two Socioeconomic Levels (per month).

	low I	middle II	t	P <
milk and cheese	56.2	80.4	2.72	.02
vegetables	44.84	51.60		NS[a]
fruit	35.05	55.20	2.41	.05
meat	45.47	42.92		NS
eggs	20.21	15.12		NS
bread and cereal	49.32	79.20	2.71	.01
desserts	18.79	32.68		NS
snacks	41.37	57.64		NS

[a]NS = Not significant

Pearson product correlation coefficients were obtained between the foods consumed by mothers and the reported consumption of 8 groups of food by preschool children. These are listed in Table 6. While the magnitude of the correlation coefficients are low, they nevertheless indicate significant relationships between diets of mothers and the reported consumption of food by preschool children.

TABLE 6
Pearson Product Correlation Coefficients Between Foods in Mother's and Children's Diets

	Child's diet				
Mother's diet	Vegetables	Fruit	Meat	Dessert	Snacks
Carrots	.32*				
Tomato, tomato juice	.45**				
Peas, green	.38*				
Watermelon, honey dew, cantaloupe		.48***			
Peaches, fresh		.48***			
Pears, fresh		.47**			
Berries, blue, straw		.39**			
Plums, grapes, grape juice		.34*			
Banana		.45**			.35*
Beef roast			.42**		
Luncheon meat			.36*		
Ice cream, ice milk				.31*	.30*
Salty snack					.33*

*P < .05
**P < .01
***P < .001

SUMMARY AND CONCLUSIONS

The results of this study indicate that the lack of major differences in the nutrient intake of mothers of preschool children from low and middle income groups. However, several differences exist in the types of food consumed by mothers in the two groups. Differences likewise exist in the reported consumption of 8 food groups by preschool children. Relationships between items in the mothers diets and reported consumption of 8 food groups by preschool children were found.

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