

FOOD NUTR RES | 中国城市地区婴幼儿摄入的食物类型分析

本文关键字：明研究、食物类型、婴幼儿、儿童、中国

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背景

中国婴幼儿的食物摄入模式目前尚不清楚。

目的

利用明研究数据，对我国城市地区婴幼儿食物群体进行特征性描述。

设计

通过与主要照料者进行面对面访谈，对从八个城市母婴护理中心招募的 1350 名婴幼儿（包括 436 名年龄在 6-11 个月的婴儿和 914 名年龄在 12-35 个月的幼儿）进行了一次 24 小时饮食回顾。所有报告的食品、饮料和膳食补充剂都被划分为 64 个食品种类中的一种，例如奶及奶制品、谷物、蔬菜、水果、蛋白类食品以及甜点/甜食。同时在不考虑摄入量的情况下，计算婴幼儿食用特定食物种类食物的百分比。

结果

只有不到一半的婴儿食用母乳（47%），有 59% 的婴儿食用婴儿配方奶粉、53%-75% 的幼儿食用成长（强化）奶粉，米饭是 6 月龄后婴幼儿食用的首要谷物类食品（高达 88%），而婴儿米粉的食用比例则较低。在进行膳食回顾的这天，约 50% 的婴儿和 38% 的幼儿并未食用任何水果。所有儿童中，仅有 40% 的儿童食用深绿叶蔬菜，而食用深黄色蔬菜的比例则更低，鸡蛋和猪肉是最常食用的蛋白质类食物。

结论

这些研究数据为这一人群未来制定详细饮食指南提供了重要参考。同时我们应鼓励母亲在婴儿 6 个月后继续母乳喂养。同时还应建议父母每天提供多种类型

的蔬菜和水果，尤其是深绿叶和深黄叶蔬菜及各种颜色的水果。还应鼓励婴儿食用强化铁的婴儿米粉，以提高中国婴儿铁元素的摄入量。

Table 1. Percentage of infants and young children consuming different types of milk at least once a day in the Maternal Infant Nutrition Growth (MING) study

Food/food groups	Age group							
	6–8 months (n = 201)	9–11 months (n = 235)	12–14 months (n = 125)	15–17 months (n = 75)	18–20 months (n = 160)	21–23 months (n = 110)	24–29 months (n = 248)	30–35 months (n = 196)
Any milk	94	91	94	93	89	88	88	88
Breast milk	58	35	18	11	5	2	0	1
Infant formula	60	58	3	1	1	6	2	1
Growing-up milk	10	12	73	73	75	71	60	53
Cow's milk	2	4	12	17	15	19	34	46
Soy milk	0	0	0	0	1	1	0	0

Table 2. Average amount of the top five milk, grain, and protein sources consumed by children in the Maternal Infant Nutrition Growth (MING) study

	Milk		Grain and grain product		Protein sources	
	Food	Per capita ml/day (mean ± SE)	Food	Per capita g/day (mean ± SE)	Food	Per capita g/day (mean ± SE)
6–8 months (n = 201)	Breast milk	263.0 ± 18.6	Rice	28.7 ± 4.8	Eggs	24.1 ± 3.6
	Infant formula	40.5 ± 3.3	Infant cereal	17.1 ± 2.4	Pork/ham	5.0 ± 1.3
	Cow's milk	3.6 ± 2.5	Noodle	9.5 ± 2.6	Dried beans/meat substitutes	2.6 ± 1.2
	Growing-up milk	1.7 ± 0.8	Steamed bread	2.7 ± 0.8	Fish/shrimp/shellfish	2.4 ± 1.6
	–	–	Millet	1.1 ± 0.5	Organ meat	0.6 ± 0.3
9–11 months (n = 235)	Breast milk	180.3 ± 17.0	Rice	63.1 ± 6.5	Eggs	32.6 ± 2.6
	Infant formula	41.6 ± 3.2	Noodle	25.4 ± 4.0	Pork/ham	7.5 ± 1.2
	Cow's milk	16.6 ± 6.3	Infant cereal	10.1 ± 1.9	Fish/shrimp/shellfish	5.2 ± 1.1
	Growing-up milk	2.1 ± 0.8	Millet	5.6 ± 1.8	Dried beans/meat substitutes	3.2 ± 0.9
	–	–	Steamed bread	5.2 ± 1.2	Organ meat	0.8 ± 0.3
12–14 months (n = 125)	Cow's milk	53.1 ± 19.0	Rice	78.8 ± 10.1	Eggs	33.9 ± 3.1
	Growing-up milk	47.3 ± 5.5	Noodle	30.2 ± 6.3	Pork/ham	12.3 ± 2.4
	Breast milk	36.3 ± 7.9	Infant cereal	5.2 ± 2.0	Dried beans/meat substitutes	8.1 ± 3.3
	Infant formula	1.1 ± 0.5	Millet	4.3 ± 1.4	Fish/shrimp/shellfish	6.4 ± 1.8
	–	–	Steamed bread	3.5 ± 1.1	Chicken/duck	3.5 ± 1.3
15–17 months (n = 75)	Cow's milk	87.7 ± 24.8	Rice	102.3 ± 12.7	Eggs	37.7 ± 4.7
	Growing-up milk	57.4 ± 9.0	Noodle	31.9 ± 6.0	Pork/ham	11.1 ± 2.8
	Breast milk	26.1 ± 10.1	Millet	12.8 ± 4.4	Fish/shrimp/shellfish	7.2 ± 2.4
	Infant formula	0.3 ± 0.3	Steamed bread	8.7 ± 2.6	Dried beans/meat substitutes	5.8 ± 1.9
	–	–	Infant cereal	1.8 ± 1.5	Chicken/duck	1.4 ± 0.8
18–20 months (n = 160)	Growing-up milk	42.8 ± 4.0	Rice	106.7 ± 9.0	Eggs	40.3 ± 3.4
	Cow's milk	42.2 ± 9.0	Noodle	24.6 ± 3.8	Pork/ham	24.3 ± 3.0
	Breast milk	8.3 ± 3.3	Bread	11.1 ± 0.9	Fish/shrimp/shellfish	20.0 ± 6.2
	Infant formula	1.3 ± 0.8	Steamed bread	6.2 ± 1.5	Dried beans/meat substitutes	12.0 ± 2.8
	–	–	Millet	3.8 ± 1.1	Chicken/duck	6.3 ± 2.2
21–23 months (n = 110)	Cow's milk	72.3 ± 15.0	Rice	95.3 ± 9.3	Eggs	41.6 ± 4.0
	Growing-up milk	44.6 ± 5.0	Noodle	27.9 ± 5.2	Pork/ham	32.4 ± 4.4
	Infant formula	3.6 ± 1.3	Steamed bread	7.4 ± 1.7	Dried beans/meat substitutes	12.1 ± 2.8
	Breast milk	1.6 ± 1.1	Commeal	5.5 ± 3.8	Fish/shrimp/shellfish	6.0 ± 1.9
	–	–	Millet	4.5 ± 1.5	Chicken/duck	4.4 ± 1.8
24–29 months (n = 248)	Cow's milk	94.6 ± 9.8	Rice	109.3 ± 6.8	Eggs	41.9 ± 2.7
	Growing-up milk	32.5 ± 3.2	Noodle	30.9 ± 4.0	Pork/ham	26.4 ± 2.8
	Infant formula	0.7 ± 0.3	Bread	13.3 ± 0.8	Dried beans/meat substitutes	23.0 ± 6.2
	Breast milk	0.5 ± 0.5	Steamed bread	7.4 ± 1.5	Fish/shrimp/shellfish	13.1 ± 2.2
	–	–	Millet	3.0 ± 0.7	Chicken/duck	7.0 ± 1.8

Table 2. (Continued)

	Milk		Grain and grain product		Protein sources	
	Food	Per capita ml/day (mean ± SE)	Food	Per capita g/day (mean ± SE)	Food	Per capita g/day (mean ± SE)
30–35 months (n = 196)	Cow's milk	122.1 ± 12.5	Rice	111.1 ± 10.0	Eggs	48.7 ± 3.1
	Growing-up milk	23.2 ± 2.2	Noodle	29.5 ± 3.6	Pork/lam	33.2 ± 3.0
	Breast milk	0.5 ± 0.4	Bread	18.1 ± 1.3	Dried beans/meat substitutes	30.0 ± 5.7
	Infant formula	0.4 ± 0.2	Millet	7.0 ± 2.1	Fish/shrimp/shellfish	15.5 ± 3.3
	–	–	Steamed bread	4.9 ± 1.3	Beef	9.1 ± 1.7

Table 3. Percentage of infants and young children consuming different types of grain at least once a day in the Maternal Infant Nutrition Growth (MING) study

Food/food groups	Age group							
	6–8 months (n = 201)	9–11 months (n = 235)	12–14 months (n = 125)	15–17 months (n = 75)	18–20 months (n = 160)	21–23 months (n = 110)	24–29 months (n = 248)	30–35 months (n = 196)
Any grain or grain products	87	97	98	99	100	97	99	99
Rice ^a	44	69	78	80	86	81	88	85
Infant cereals	40	26	9	4	3	2	4	8
Noodles	16	32	37	43	33	41	34	42
Steamed bread	10	13	10	20	14	20	15	11
Millet	4	12	12	15	9	12	10	11
Bread	2	5	6	4	8	4	9	11
Pancakes ^b	1	0	2	0	3	4	4	6
Cornmeal	1	1	3	4	4	5	2	5

^aIncludes steamed rice, rice porridge, sticky rice, and non-infant rice noodles.

^bIncludes pancakes, fried bread stick, seedcake, and clay oven rolls.

Table 4. Percentage of infants and young children consuming different types of fruits at least once a day in the Maternal Infant Nutrition Growth (MING) study

Food/food groups	Age group							
	6–8 months (n = 201)	9–11 months (n = 235)	12–14 months (n = 125)	15–17 months (n = 75)	18–20 months (n = 160)	21–23 months (n = 110)	24–29 months (n = 248)	30–35 months (n = 196)
Any fruit or juice	48	55	62	55	68	73	60	63
Any fruit	46	53	60	52	67	73	59	63
Types of non-baby food fruits								
Canned fruit	0	0	0	1	0	0	0	0
Any fresh fruit	46	53	59	52	66	72	59	62
Any dried fruit	0	0	3	3	5	4	3	3
Types of fruit ^a								
Apple	29	35	29	32	38	32	33	30
Banana	12	14	17	15	19	12	13	14
Citrus fruits	9	15	27	19	24	31	26	28
Pear	4	2	6	5	6	10	7	8
Grapes	3	3	2	4	4	5	2	0
Kiwi	1	3	4	3	8	4	2	3
Peach	2	2	2	5	3	2	1	2
Melon	2	0	2	1	3	2	2	1
Berries ^b	1	1	2	1	3	2	2	1
Others ^c	2	3	4	5	4	6	6	7
Baby food fruits	1	1	0	0	0	0	0	0
100% fruit juice								
Apple juice	2	1	2	3	1	0	1	1
Orange juice	0	0	0	0	0	0	0	0

^aIncludes non-baby food fruits.

^bIncludes strawberries, cherry, and mulberry.

^cIncludes persimmon, pomegranate, longan, dragon fruits, jujube, pineapple, plum, litchi, and mango.

Table 5. Average amount of the top five fruits and vegetables consumed by children in the Maternal Infant Nutrition Growth (MING) study

	Fruits	Per capita g/day (mean±SE)	Vegetables	Per capita g/day (mean±SE)
6–8 months (n = 201)	Apple	18.9 ± 3.3	Chinese cabbage	3.1 ± 0.9
	Banana	4.9 ± 1.2	Carrots	2.7 ± 0.9
	Citrus fruits	1.9 ± 0.5	Spinach	2.6 ± 1.5
	Pear	4.5 ± 3.1	Cole	0.9 ± 0.4
	Grapes	0.5 ± 0.2	Sweet potato	0.9 ± 0.4
9–11 months (n = 235)	Apple	29.8 ± 3.6	Chinese cabbage	4.8 ± 1.1
	Citrus fruits	8.0 ± 1.7	Spinach	4.2 ± 1.3
	Banana	8.3 ± 1.8	Carrots	2.7 ± 0.7
	Grapes	0.6 ± 0.2	Tomato	4.6 ± 1.5
	Kiwi	2.6 ± 1.1	Cole	1.7 ± 0.4
12–14 months (n = 125)	Apple	21.0 ± 4.0	Chinese cabbage	7.8 ± 1.6
	Citrus fruits	19.6 ± 3.9	Spinach	8.1 ± 4.1
	Banana	12.3 ± 2.7	Tomato	4.6 ± 1.3
	Pear	0.9 ± 4.1	Carrots	4.5 ± 2.0
	Kiwi	2.7 ± 1.3	Cole	3.4 ± 1.2
15–17 months (n = 75)	Apple	29.9 ± 6.4	Chinese cabbage	8.8 ± 2.8
	Citrus fruits	13.6 ± 4.5	Tomato	7.0 ± 2.2
	Banana	10.6 ± 3.5	Spinach	4.6 ± 1.7
	Pear	9.7 ± 4.7	White potato	3.5 ± 1.8
	Peach	8.8 ± 5.6	Carrots	4.6 ± 2.0
18–20 months (n = 160)	Apple	36.2 ± 4.8	Chinese cabbage	13.9 ± 2.3
	Citrus fruits	20.0 ± 3.9	Spinach	4.9 ± 1.2
	Banana	15.7 ± 3.2	Tomato	6.8 ± 2.4
	Kiwi	11.8 ± 4.5	White potato	3.8 ± 1.1
	Pear	4.3 ± 1.8	Cole	3.4 ± 1.1
21–23 months (n = 110)	Apple	31.0 ± 5.7	Chinese cabbage	15.5 ± 3.2
	Citrus fruits	20.4 ± 4.1	Tomato	5.5 ± 1.9
	Banana	9.5 ± 3.0	Spinach	4.5 ± 1.4
	Pear	10.3 ± 3.3	White potato	3.7 ± 1.2
	Grapes	0.7 ± 0.3	Cole	3.0 ± 1.2
24–29 months (n = 248)	Apple	36.2 ± 7.5	Chinese cabbage	12.7 ± 2.6
	Citrus fruits	23.1 ± 3.8	Carrots	6.3 ± 1.1
	Banana	13.9 ± 2.9	Tomato	8.2 ± 1.6
	Pear	7.5 ± 2.4	Cole	8.5 ± 1.9
	Grapes	0.8 ± 0.4	Spinach	7.9 ± 2.0
30–35 months (n = 196)	Apple	27.3 ± 3.9	Chinese cabbage	22.3 ± 2.7
	Citrus fruits	29.1 ± 5.1	Carrots	9.7 ± 1.6
	Banana	15.0 ± 3.7	Tomato	7.9 ± 1.5
	Pear	7.8 ± 2.3	Nori	5.4 ± 1.2
	Kiwi	2.5 ± 1.0	Cole	7.3 ± 1.8

Table 6. Percentage of infants and young children consuming different types of vegetables at least once a day in the Maternal Infant Nutrition Growth (MING) study

Food/food groups	Age group							
	6–8 months (n = 201)	9–11 months (n = 235)	12–14 months (n = 125)	15–17 months (n = 75)	18–20 months (n = 160)	21–23 months (n = 110)	24–29 months (n = 248)	30–35 months (n = 196)
Any vegetable	37	57	77	71	83	84	87	91
Types of non-baby food vegetables ^a								
Dark green vegetables ^b	11	22	34	31	34	31	38	31
Deep yellow vegetables ^c	11	17	18	21	10	16	26	35
White potatoes	2	5	6	11	10	9	13	10
French fries and other fried potatoes	1	0	1	1	2	4	2	2
Other starchy vegetables ^d	3	4	6	7	8	9	18	24
Other vegetables ^e	17	32	55	52	64	63	65	76
Baby food vegetables	3	1	1	0	0	0	0	1

^aIncludes non-baby food vegetables.

^bDark green vegetables include broccoli, spinach, cole, Chinese chives, and romaine lettuce.

^cDeep yellow vegetables include carrots, pumpkin, and sweet potatoes.

^dStarchy vegetables include corn, green peas, broad beans, Chinese yam, lotus root, and taro.

^eOther vegetables include Chinese cabbage, green beans, celery, peppers, mushrooms, eggplant, cucumber, tomatoes/tomato sauce, cauliflower, yellow beans (soy beans), zucchini, onions, lettuce, garlic bolt, agaric, garlic sprouts, white radish, nori, wax gourd, kelp, bitter melon, loofah, green onion, lily, and pickles.

Table 7. Percentage of infants and young children consuming meat or other protein sources at least once a day in the Maternal Infant Nutrition Growth (MING) study

Food/food groups	Age group							
	6–8 months (n = 201)	9–11 months (n = 235)	12–14 months (n = 125)	15–17 months (n = 75)	18–20 months (n = 160)	21–23 months (n = 110)	24–29 months (n = 248)	30–35 months (n = 196)
Any meat or protein source	74	92	97	97	99	98	98	99
Non-baby food meat	20	45	54	51	71	67	74	84
Types of meat								
Pork/ham	12	25	34	25	48	55	54	62
Chicken or duck	1	3	7	5	9	8	12	15
Fish, shrimp or shellfish	7	17	15	20	27	12	23	27
Beef	1	2	5	4	4	3	8	19
Hot dogs/sausages	0	1	3	7	3	3	6	3
Lamb	1	0	0	1	3	1	1	2
Organ meat	3	4	5	5	3	2	2	2
Other ^a	0	0	1	0	0	1	0	1
Baby food meat	1	1	1	0	0	0	0	1
Other protein sources	71	89	94	95	98	96	97	97
Dried beans and meat substitutes ^b	3	7	12	20	16	12	20	20
Eggs	51	62	65	60	66	69	69	77
Peanut butter, nuts, seeds	0	2	9	0	7	9	8	8
Cheese	1	0	1	0	0	1	1	2
Yogurt	1	1	2	5	7	15	9	17
Beans ^c	1	1	4	4	6	4	5	3
Soup ^d	5	6	17	11	10	14	15	9

^aIncludes rabbit meat, goose, and pigeon meat.

^bIncludes black soybean, soybean, and soybean products including tofu.

^cIncludes mung beans, red beans, kidney bean, broad bean, lentils, pea, and green soy bean.

^dThe amount of protein provided by soup varies.

Table 8. Percentage of infants and young children consuming desserts, sweets, sweetened beverages, and salty snacks at least once a day in Maternal Infant Nutrition Growth (MING) study

Food/food groups	Age group							
	6–8 months (n = 201)	9–11 months (n = 235)	12–14 months (n = 125)	15–17 months (n = 75)	18–20 months (n = 160)	21–23 months (n = 110)	24–29 months (n = 248)	30–35 months (n = 196)
Any type of dessert, sweet, sweetened beverage	14	23	38	37	33	44	44	42
Desserts and candy	11	22	29	32	26	36	36	26
All cakes, pies, cookies, and pastries	11	22	29	31	25	36	33	20
Baby cookies, teething biscuits	1	0	0	0	0	0	0	0
Other cookies	10	20	21	24	19	31	24	13
Cake	2	2	8	3	3	2	6	5
Pies and pastries	0	0	0	1	1	0	0	1
Ice cream, pudding	0	0	0	0	1	3	1	2
Other desserts ^a	1	0	1	3	3	5	4	2
Candy	0	0	2	1	3	3	4	8
Other sweets	3	2	11	8	8	11	14	18
Milk flavoured sweets	0	1	6	4	4	7	7	9
Sugar, syrup, honey, preserves	3	1	5	4	4	4	9	10
Sweetened beverages	1	1	4	1	3	3	0	5
Carbonated sodas	0	0	0	1	0	1	0	1
Fruit-flavored drinks	1	1	3	0	3	2	0	3
Other ^b	0	0	1	0	1	0	0	1
Salty snacks ^c	1	2	1	1	3	6	3	3

^aIncludes tea soup, glue pudding, tortoise jelly, caramel treats, mung bean cake (green bean cake), and laozao (fermented sticky rice desert).

^bIncludes tea (all types).

^cIncludes potato chips, popcorn, and other types of chips and salty snacks.

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