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Braga Lima, Daniela; Fujimori, Elizabeth; Vilela Borges, Ana Luiza; Santana da Silva, Margarida Maria

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Feeding in the two first years of life*

PRÁTICA ALIMENTAR NOS DOIS PRIMEIROS ANOS DE VIDA

PRÁCTICA ALIMENTICIA EN LOS PRIMEROS DOS AÑOS DE VIDA

Daniela Braga Lima¹, Elizabeth Fujimori², Ana Luiza Vilela Borges³, Margarida Maria Santana da Silva⁴

ABSTRACT

We evaluated the feeding practices of children younger than two years. This cross-sectional study was conducted in 2004-05. Data was obtained from the Population Study of Food Consumption in Belo Horizonte/ECAP-BH. The sample included 148 children younger than two years. We conducted interviews at home with mothers/guardians and surveyed the foods consumed in the past 24 hours, including breast milk and age at introduction of complementary feeding. The medians of exclusive and total breastfeeding were 60 and 150 days, respectively. The introduction of other types of milk and non-dairy foods occurred earlier. From a nutritional standpoint, the diets were unbalanced and iron was the most deficient nutrient in the first year of life. The results show the need to implement intervention measures in the municipal health services to promote healthy complementary feeding.

DESCRIPTORS

Child
Breast feeding
Supplementary feeding
Child Health Services

RESUMO

Avaliou-se prática alimentar de crianças menores de dois anos. Estudo transversal desenvolvido em 2004-2005, a partir de dados do Estudo de Consumo Alimentar Populacional de Belo Horizonte/ECAP-BH. A amostra compreendeu 148 crianças menores de dois anos. Realizou-se entrevista em domicílio com mães/responsáveis e levantou-se os alimentos consumidos nas últimas 24 horas, incluindo leite materno e idade de introdução da alimentação complementar. Medianas de aleitamento materno exclusiva e total foram 60 e 150 dias, respectivamente. A introdução de outros tipos de leite e de alimentos não-lácteos ocorreu precocemente. Do ponto de vista nutricional, as dietas eram desbalanceadas e o ferro foi o nutriente mais deficiente no primeiro ano de vida. Os resultados evidenciam a necessidade da implementação de medidas de intervenção nos serviços de saúde do município para a promoção da alimentação complementar saudável.

DESCRIPTORES

Criança
Aleitamento materno
Suplementação alimentar
Serviços de Saúde da Criança

RESUMEN

Se evaluó la práctica alimenticia de niños menores de dos años. Estudio transversal desarrollado en 2004-2005, a partir de datos del Estudio de Consumo Alimenticio Poblacional de Belo Horizonte/ECAP-BH. La muestra incluyó 148 niños menores de dos años. Se realizó entrevista en domicilio con madres/responsables y se tomó nota de los alimentos consumidos en las últimas 24 horas, incluyendo leche materna y edad de introducción de alimentación complementaria. Los promedios de amamantamiento materno exclusivo y total fueron 60 y 150 días, respectivamente. La introducción de otros tipos de leche y de alimentos no lácteos sucedió precozmente. Desde el punto de vista nutricional, las dietas estaban desbalanceadas, destacándose el déficit de hierro en el primer año. Los resultados evidenciaron la necesidad de implementar medidas de intervención en servicios de salud municipales para promoción de alimentación complementaria saludable.

DESCRIPTORES

Niño
Lactancia materna
Alimentación suplementaria
Servicios de Salud del Niño

* Extracted from the research group "Núcleo de Estudos Epidemiológicos na Perspectiva da Enfermagem em Saúde Coletiva", School of Nursing, University of São Paulo, 2011. ¹ Doctoral student in nursing, School of Nursing, University of São Paulo. Master degree in Nutrition Sciences, Federal University of Viçosa. Assistant Professor at Faculdade de Nutrição, Federal University of Alfenas. Alfenas, MG, Brazil. danibraga@usp.br ² Associate Professor, Collective Health Nursing Department, School of Nursing, University of São Paulo. São Paulo, SP, Brazil. efujimor@usp.br ³ Ph.D. Professor, Collective Health Nursing Department, School of Nursing, University of São Paulo. São Paulo, SP, Brazil. ⁴ Ph.D. Professor, Nutrition and Health Department, Federal University of Viçosa. Viçosa, MG, Brazil.

INTRODUCTION

In the two first years of life, there is an accelerated growth followed by a development of the child's abilities to receive, chew, digest, and control the process of ingesting food⁽¹⁾. The nutritional deficiencies resulting from inappropriate feeding habits can cause immediate harms that increase the child morbidity-mortality rates and can result in complications such as delayed growth, school delays, in addition to an increased risk for developing chronic-degenerative diseases in adulthood⁽²⁻⁵⁾. For this reason, nutritional and feeding issues deserve especial attention in this period of life.

The World Health Organization⁽⁶⁾, as well as the Brazilian Ministry of Health^(1,7-8), recommend exclusive breastfeeding until the sixth month of life, with the introduction of nutritionally appropriate complementary foods from that moment on, while still maintaining breastfeeding until the age of two years. The harms of introducing complementary foods before the age of six months surpass, by far, any chance of benefit from this practice.

The Second Study about the Prevalence of Breastfeeding (*II Pesquisa de Prevalência de Aleitamento Materno - IIPPAM*) showed that the median of exclusive breastfeeding in Brazil was 1.8 months, and 11.2 months of total breastfeeding, which is much less than the recommendations. The study also showed that the introduction of tea, water, juice and other types of milk were initiated in the first weeks of life and that about one forth of the children of ages 3-6 months were already fed with savory foods and fruits⁽⁹⁾.

In this sense, the objective of this study was to evaluate the feeding habits of children younger than two years of age.

The nutritional deficiencies resulting from inappropriate feeding habits can cause immediate harms that increase the child morbidity-mortality rates and can result in complications such ...

breast milk, and the age at which complementary foods were introduced. Data collection was performed with the help of students from the Nutrition Course, who were trained and supervised.

The type of breastfeeding was classified as proposed by the Pan-American Health Organization – PAHO/World Health Organization – WHO (1991)⁽¹⁰⁾. The number of bottles/day that were given to the children receiving other types of milk was identified in the interview. The number of bottles was evaluated considering the age group, according to the recommendation of the Food Guide for Children Younger than Two Years⁽⁵⁾.

The nutritional adequacy of the diets was analyzed regarding the energy, protein, iron, calcium and Vitamins A and C, according to the recommendations of the Dietary Reference Intakes – DRI's of the Institute of Medicine/Food and Nutrition Board⁽¹¹⁻¹²⁾. These elements were chosen considering their relationship with the nutritional deficiencies of greater epidemiologic relevance in Brazil. For this analysis, the children were divided into two age groups (7-12 months and 13-24 months), due to the ranges of nutritional recommendation.

The descriptive and inferential analyses of the data were performed using the Statistical Package for the Social Sciences 17.0; and the X^2 test was used to evaluate the association between variables that could interfere in breastfeeding; Pearson's correlation was used to analyze the relationship between the child's age and the inclusion of each food and the time of total breastfeeding (both expressed by the child's days of life). Using the t test, the means of food consumption were compared according to age groups; and the *Mann Whitney* test was used to evaluate the vitamin C variable, which did not show a normal distribution.

METHOD

This population-based cross-sectional study integrated a broader investigation named *Population Food Consumption Study (Estudo de Consumo Alimentar Populacional – ECAP-BH)*, developed in Belo Horizonte, Minas Gerais, in 2004/05, approved by the Human Research Ethics Committee at Federal University of Viçosa.

Of all the 2,856 households that comprised the sample of the ECAP-BH study, 258 had children younger than two years old. Of this subsample, 140 parents/guardians agreed to participate in the study, which resulted in the evaluation of 148 children, accounting for 56.9% of all children and 54.3% of the families in the ECAP-BH with children in this age group. The questionnaire applied to the mothers/guardians covered information regarding all the foods consumed over the last 24 hours, including

RESULTS

The studied population consisted of 77 (52.0%) girls. Regarding the age group, 28.4% were younger than six months, 23.6% were between 7 and 12 months old, 26.4% between 13 and 18 months, and 21.6% between 19 and 24 months. Most (96.6%) children were breastfed at birth. The breastfeeding median was 60 days and total breastfeeding was 150 days.

Regarding the distribution of children according to the type of breastfeeding in the first two years of life, it was observed that there was a progressive decline in exclusive breastfeeding with age and an early inclusion of other types of milk. A statistically significant association was found between the type of feeding and age group, except for breastfeeding (Table 1).

Table 1 - Distribution of children according to the type of feeding and age group - Belo Horizonte, 2004-2005

Type of feeding*	Age group (months)							
	0-6		7-12		13-18		19-24	
	n	%	n	%	n	%	n	%
EBF	11	26,2	-	-	-	-	-	-
PBF	4	9,5	-	-	-	-	-	-
BF	15	35,7	16	45,7	7	17,9	9	28,1
NBF	12	28,6	19	54,3	32	82,1	23	71,9
Total	42	100,0	35	100,0	39	100,0	32	100,0

*EBF = Exclusive breastfeeding; PBF = Predominant breastfeeding; BF = Breastfeeding; NBF = No breastfeeding; **p-value refers to the chi-square test.

Regarding the difficulty to maintain breastfeeding, it was found that 40.0% presented problems due to the child's rejection (12.2%), returning to work (7.4%), weak milk (6.2%), mother's and/or baby's disease (6.8%) and percentage of the mothers (7.4%) were unable to specify.

It was confirmed that 28.0% of the children of ages 7-12 months and 40.0% of those of ages 19-24 months were fed 4-6 bottles per day.

Table 2 shows the median age when food was included in the eating scheme: tea, powdered milk, and other types of milk as early as in the first month of life and a variety of foods as of the 4th month of life.

Table 2 - Median of the age and interquartile interval (in days) of when foods were included in the feeding scheme of children younger than two years - Belo Horizonte, 2004-2005

Foods	Percentile	Median Age	Percentile
	25		75
Tea	30	60	120
Powdered milk	30	60	120
Other types of milk	30	90	135
Water	60	90	150
Cow's milk	90	120	180
Fruit puree	120	150	180
Vegetable puree	120	150	180
Fruits	120	180	210
Cookies	150	180	240
Rice/beans	180	180	240

Table 3 shows that there was an early inclusion of cow's milk, either liquid or powdered, water, tea, fruit or fruit puree, which contributed to the reduction of the total breastfeeding time ($p < 0.001$). The inclusion of vegetable puree and rice and/or beans showed a smaller power of correlation, but the same level of significance.

The mean intake of the analyzed nutrients was 100% above the recommended, except for iron in the age group 7-12 months. No statistically significant difference was found in the daily intake of nutrients by age group, although it was observed for the intragroup variation (Table 4).

Table 3 - Pearson's coefficient estimates for the month the foods were included in the feeding scheme of children younger than two years and the months of total breastfeeding - Belo Horizonte, 2004-2005.

Foods	Total breastfeeding time	
	R	p
Tea	0,40	<0,001
Powdered milk	0,55	<0,001
Water	0,40	<0,001
Other types of milk	0,43	0,467
Cow's milk	0,55	<0,001
Fruit puree	0,40	<0,001
Vegetable puree	0,34	<0,001
Fruits	0,40	<0,001
Cookies	0,13	0,181
Rice/beans	0,30	<0,001

DISCUSSION

Nearly all the children (95%) were breastfed in the beginning of their lives, which agrees with what has been observed in Brazil⁽¹³⁾. In the cities of São Paulo and Campinas, besides the Alto Jequitinhonha region, this prevalence was 95.7%, 92.3%, 97.9%, respectively⁽¹⁴⁾.

The breastfeeding mean, however, is much below the six-months recommendation. The value found was smaller than the 2.17 months found in the PNDS/2006 survey for Brazil⁽¹³⁾. The total breastfeeding median was also smaller than the 7.6 months found in the PNDS/2006 survey⁽¹³⁾. One of the difficulties of breastfeeding is the lack of support from health services that involves not only biological, but also social and cultural aspects⁽¹⁵⁾. This indicated the importance of the collective effort between health services, health professionals and social equipment, in combination with public policies.

Considering the proportion of children aged 7-12 months (28%) and 19-24 months (40%) that were fed 4-6 bottles/day, it is a concerning situation because, according to the Food Guide for Children Younger than Two Years, the recommendation is of three dairy meals per day⁽⁵⁾. This food scheme suggests that milk replaces the meals rather than complementing them, as recommended,

Table 4 - Mean intake, standard deviation and percentage adequacy of energy and nutrients according to age group - Belo Horizonte, 2004-2005

Dietary variable	Age group (months)				p-value**
	7- 12		13-24		
	Mean (SD)	Adequacy (%)	Mean (SD)	Adequacy (%)	
Energy (Kcal) ^a	1254,6 (347,0)	176,8	1279,3 (323,8)	125,5	0,819
Protein (g) ^b	38,9 (18,5)	288,2	50,3 (18,1)	386,6	0,060
Calcium (mg) ^c	870,3 (511,1)	322,3	901,1 (452,6)	180,2	0,840
Iron (mg) ^d	5,9 (3,5)	85,5	8,7 (4,7)	290,3	0,056
Vitamin A(mcg) ^e	1218,8 (937,3)	243,8	1047,4 (910,2)	498,8	0,566
Vitamin C(mg) ^f	82,8 (42,5)	165,7	84,2 (120,9)	647,69	0,129

**p-value refers to the Student's t Test = a,b,c,d,e; Mann-Whitney test = f

which could contribute to the development of anemia and a deprivation of other nutrients.

As observed, as early as the fourth month (120 days), the evaluated children already consumed a large variety of foods, including other types of milk, fruits and vegetables. The data found are similar to the PNDS/2006⁽¹³⁾ and IIPPAM/2008⁽⁹⁾. By comparing the identified food inclusion profile to what is recommended in literature, it was found that, besides the offer beginning very early, the food sometimes is not appropriate for the child's age. According to some authors⁽⁷⁻⁸⁾, the early inclusion of complementary foods in the infants' diet, besides not offering any benefits, actually has negative effects related to child morbidity.

As long as nutrition is concerned, the early inclusion of complementary foods can be harmful, because in addition to replacing part of the breast milk, even when the frequency of the feeds are maintained, the foods are often nutritionally inferior to breast milk⁽¹⁶⁾. A shorter period of breastfeeding, besides not protecting, exposes the child to health problems and does not improve development⁽⁷⁻⁸⁾.

There are no population data that characterize the Brazilian children's standard intake of nutrients, but information from a multicenter study in some Brazilian cities indicate that the amount of energy and proteins in the diet of children from São Paulo, Salvador and Curitiba presents adequacy percentages that exceed in 100% the recommendations, whereas the participation of protein exceeds 200% in the age range of 7-12 months and 300% in that of 13-24 months⁽¹⁷⁾.

Regarding the micronutrients, the iron values identified below the recommendations confirm the high rates of de iron-deficiency anemia present in Brazilian children younger than two years in some regions of the country⁽¹⁷⁻¹⁹⁾. The adequacy of Vitamin C ingestion found in the two age ranges in the present study, in values above the recommendation, is favorable to increase the absorption

of non-heme iron, besides strengthening the child's immunologic system.

In general, Brazilian children younger than two years consume adequate amounts of Vitamin A, except for the northeast region⁽¹⁷⁾, because their diet includes pumpkins, carrots, papaya, and other foods that favor the intake of this vitamin. It is clear that the adequacy of calcium observed in this study is mainly due to the expressive participation of milk and yogurt in the children's diet.

In summary, we should consider that, lately, in Brazil, children's health has become more prominent in the public agenda and many vertical health programs were broadly implemented; for instance, the promotion of healthy eating habits in the first years of life, with the National Program to Encourage Breastfeeding, launched in 1981; the duration of the maternity leave, which was extended from two months (as it has been since 1943) to four months in 1998 and six months in 2006; and the International Code of Marketing of Breast Milk Substitutes was rigorously implemented since 1988, among other initiatives⁽²⁰⁾.

CONCLUSION

This study confirms that a high percentage of the evaluated children are breastfed early in life, similar to the reviewed studies. The exclusive breastfeeding median is far from the recommendation of 180 days. A progressive decline is noted in exclusive breastfeeding with age, even before six months, which characterizes a situation of early complementary feeding, through the inclusion of other types of milk and non-dairy foods. As far as nutrition is concerned, it was identified there was an unbalanced intake, in which iron was the most deficient nutrient in the first year of life. In conclusion, the feeding of the studied children implies an aspect of vulnerability to their health, particularly with the early and inappropriate inclusion of complementary foods.

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