



## ORIGINALES

### Feeding practices among children under one year of age admitted to a public hospital

Práticas alimentares entre crianças menores de um ano internadas em hospital público

Prácticas alimentarias entre niños menores de un año ingresados en hospital público

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#### ABSTRACT:

**Introduction:** Food is an important factor to ensuring the existence, growth and development of a child.

**Objectives:** to identify the socioeconomic profile of children under one year of age hospitalized in a public hospital in the country side of Maranhão and of their mothers; to know the complementary feeding given by mothers and their history of breastfeeding.

**Method:** Descriptive, cross-sectional, quantitative research conducted between February and September 2015. Data were collected through forms applied to mothers, and the sample comprised 174 individuals.

**Results:** 62.7% of the children were male, 42.5% were 1 to 4 months old, 55.7% were hospitalized with respiratory problems, their mothers were housewives aged between 15 and 35 years. The data showed that children received liquids, artificial milk and food precociously, and only 20.1% had practiced exclusive breastfeeding until the sixth month.

**Conclusion:** The children under one year of age have an inadequate eating pattern. Therefore, actions that promote the practice of healthy feeding are necessary.

**Key-words:** Complementary feeding; Child; Hospitalization.

#### RESUMO:

**Introdução:** A alimentação é um fator de importância para assegurar a existência, o crescimento e o desenvolvimento adequados de uma criança.

**Objetivos:** identificar o perfil socioeconômico das crianças menores de um ano internadas em hospital público no interior do Maranhão e de suas mães; conhecer a alimentação complementar praticada por elas e o histórico de aleitamento materno das mesmas.

**Método:** Pesquisa descritiva, transversal, quantitativa, realizada entre fevereiro e setembro de 2015. Dados coletados através de formulários aplicados às mães, sendo que a amostra compreendeu 174 sujeitos.

**Resultados:** Eram do sexo masculino 62,7% das crianças, 42,5% tinham de 1 a 4 meses, 55,7% foram internadas com problemas respiratórios, suas mães eram donas de casa com idade entre 15 e 35 anos. Os dados mostram que as crianças receberam líquidos, leite artificial e alimentos precocemente, e apenas 20,1% praticaram o aleitamento materno exclusivo até o sexto mês.

**Conclusão:** As crianças menores de um ano internadas apresentam padrão alimentar inadequado. Portanto, são necessárias ações que promovam a prática da alimentação saudável.

**Palavras chave:** Alimentação complementar; Criança; Hospitalização.

## RESUMEN:

**Introducción:** La fuente de alimentación es un factor importante para asegurar el correcto crecimiento y desarrollo de un niño.

**Objetivo:** Identificar el perfil socioeconómico de los niños menores de un año ingresados en hospital público en interior del Maranhão y de sus madres; conocer la alimentación complementaria practicada por ellas y el histórico de amamantamiento materno.

**Método:** Investigación descriptiva, transversal de naturaleza cuantitativa, realizada entre febrero y septiembre de 2015. Datos recolectados en formularios aplicados a las madres de los niños, siendo la muestra de 174 sujetos.

**Resultados:** Eran del sexo masculino 62,7% de los niños, 42,5% tenían de 1 a 4 meses, 55,7% fueron ingresados con problemas respiratorios, sus madres eran amas de casa con edad entre 15 y 35 años. Los datos muestran que los niños recibieron líquidos, leche artificial y alimentos precozmente, y sólo 20,1% practicaron el amamantamiento materno exclusivo hasta el sexto mes.

**Conclusión:** Los niños ingresados menores de un año presentan patrón de alimentación inadecuado. Por lo tanto, son necesarias acciones que promuevan la práctica de la alimentación saludable.

**Palabras clave:** Alimentación complementaria; Niño; Hospitalización.

## INTRODUCTION

An adequate diet in the first two years of life is essential, as this is a period characterized by rapid growth, development and formation of eating habits that will likely remain throughout life<sup>(1)</sup>.

Food is an important factor to ensuring the existence, growth and development of a child. Breastfeeding (BF) is a more natural, physiological, and guaranteed way of feeding a baby in the first six months of life. Breastfeeding should be exclusive up to six months of age and supplemented up to two years or more<sup>(2)</sup>.

In the sixth month of life, it is necessary to introduce complementary foods because the nutritional needs in this age group are no longer supplied by the mother's milk alone<sup>(3)</sup>.

Adequate supplementation should include a balanced set of foods with adequate amounts of micro- and macronutrients, free from contamination, of easy access, reasonable cost, and be prepared along with the food of the family's daily routine. The infants' food should initially have thick and pasty texture. From the eighth month onwards, the offering of solid food is started, which can be kneaded, broken or cut into small pieces. At twelve months, the child should already eat the same foods of the family, besides the milk of the mother<sup>(2)</sup>.

The premature introduction of complementary foods increases infant morbidity and mortality due to a lower intake of protection elements present in breast milk, leaving the child more exposed to infectious diseases and malnutrition, especially in the case of those children living in places with poor hygiene conditions. Complementary food also interferes with the assimilation of relevant nutrients from the mother's milk, such as iron and zinc, as well as favor the risk of food allergy<sup>(4)</sup>.

The Ministry of Health (MOH) states that if, on the one hand, the introduction of additional foods may seem attractive to the babies who are exclusively breastfed and who show a delay in weight gain, on the other hand, this introduction, on a regular basis, represents greater risk of infections and, in conditions of extreme misery, even greater risk of dying. There is a consensus, however, on the need to avoid the introduction of supplementary feeding before the age of six months, for the harms far outweigh any possible benefits<sup>(5)</sup>.

The short duration of exclusive breastfeeding (EBF), which provides undeniable nutritional advantages, the delayed introduction of iron-rich foods and the insufficient or inadequate intake of stimulants of its absorption can be considered predisposing elements for the development of iron deficiency anemia in this age group<sup>(6)</sup>.

Beans, a common component of the diet of Brazilians, stands out among the foods that contain iron. Beans are naturally rich in iron and a rich source to fill the need for this nutrient in the fight against iron deficiency anemia. However, it should be noted that this food should not be offered before the child's sixth month of life<sup>(7)</sup>.

It has been noticed that many children are often hospitalized with infectious diseases. In this sense, a detailed study about the causes of these diseases and whether the early introduction of complementary feeding has been practiced among these children who become ill is important. Thus, the present study aimed to identify the socioeconomic profile of children under one year of age hospitalized in a public hospital in the country side of Maranhão, in the Municipal Children's Hospital of Imperatriz (HMII) and their mothers, and to know the complementary feeding given to these children and their history of breastfeeding.

## METHOD

Descriptive, cross-sectional study with quantitative approach performed at the HMII, which is a reference hospital in pediatrics in the whole region. The survey was conducted between February and September 2015.

The study population consisted of children under 1 year of age hospitalized in the HMII diagnosed with infectious diseases. The sample was composed of 174 cases out of a population of 263 children who were hospitalized in 2012. Children who lived in the municipality of Imperatriz and were in the age group of up to one year of life were included in the study, and those older than one year, with any congenital pathology such as heart, renal or neurological disease and HIV/AIDS diagnosis were excluded. The data were collected by the researchers through a form containing closed and open questions and typed in a program developed in *Java* language and then organized and tabulated in Microsoft Excel spreadsheets and descriptively analyzed, considering absolute and relative frequencies.

The research followed the ethical precepts and was approved by the Research Ethics Committee of the Federal University of Maranhão under Opinion 698.692/2014.

## RESULTS

Ninety-seven out of the 174 children (55.7%) had been hospitalized due to respiratory problems, 35 (20.2%) due to diarrhea, 32 (18.5%) due to fever, and 10 (5.6%) had other infectious diseases such as visceral leishmaniasis (2; 1.1%), whooping cough (2; 1.1%), otitis (3; 1.7%), and urinary tract infection (3; 1.7%).

The data found that 109 (62.7%) of the study participants were male and 74 (42.5%) were between 1 and 4 months of age as shown in table 1.

**Table 1:** Age of children participating in the study. HMII, Imperatriz-MA, Brazil, 2015

Age/gender	Children		Male		Female	
	n	%	n	%	n	%
< 1 month	28	16.1	17	9.8	11	6.3
1-4 months	74	42.5	51	29.3	23	13.2
5-6 months	27	15.5	16	9.2	11	6.3
7-12 months	44	25.9	25	14.4	20	11.5
Total	174	100	109	62.7	65	37.3

As to the origin of the subjects, 90 (51.7%) were from neighbor cities and 10 (5.7%) were from other states (table 2).

**Table 2:** Origin of the children participating in the study. HMII, Imperatriz-MA, Brazil, 2015.

Municipality/State	Children	
	n	%
Imperatriz	74	42.5
Other cities in MA	90	51.7
Tocantins	6	3.5
Pará	4	2.3
Total	174	100

Considering the maternal variables, it was observed that 102 (58.6%) mother were between 21 and 30 years old, 87 (49%) had completed high school, 70 (40.2%) were married, 128 (73.6%) lived with a family income between one and two minimum wages, 129 (74.1%) were housewives, 117 (67.2%) had more than 1 child, and 125 (71.8%) had already breastfed previous kids (table 3).

**Table 3:** Demographic, socioeconomic and obstetric profile of the mothers of children admitted to HMII. HMII, Imperatriz-MA, Brazil, 2015

Maternal variables	n	%
<b>Age</b>		
15 to 20 years	45	25.9
21 to 30 years	102	58.6
31 to 35 years	20	11.5
> 35 years	7	4.0

<b>Schooling</b>		
Never went to school	4	2.3
Primary Education	64	36.8
Secondary Education	87	49.0
Higher Education	19	9.9
<b>Marital status</b>		
Single	37	21.3
Cohabitation	65	37.4
Married	70	40.2
Widow	2	1.1
<b>Family Income</b>		
< 1 Minimum wage	28	16.1
1 to 2 Minimum wages	128	73.6
≥ 3 Minimum wages	18	10.3
<b>Employment situation</b>		
Works out of home	27	15.5
Housewife	129	74.1
Maternity leave	18	10.4
<b>Obstetric situation</b>		
Primiparous	57	32.8
Multiparous	117	67.2
<b>Previous breastfeeding</b>		
Yes	125	71.8
No	49	28.2
Total	174	100

The data show that several children under six months of age had been give liquids, artificial milk and food, 30 (17.2%) had been given juices, 23 (13.2%) ate some type of fruit, 10 (5.8%) had eaten vegetables, 7 (4.0%) beans, 27 (15.5%) had received porridge, 8 (4.6%) had eaten meat, 30 (17.2%) had received sugar-sweetened foods, 16 (9.2%) had been given biscuits and salty snacks, 3 (1.7%) had drunk coffee, and 2 (1.2%) had received carbonated drinks (table 4).

Among children aged 6 to 12 months, 55 (31.6%) had received juices, 30 (17.2%) fruits, 40 (23%) vegetables, 36 (20.7%) beans, 30 (17.2%) porridge, 31 (17.8%) meat, 32 (18.4%) sugar-sweetened foods, 29 (16.7%) biscuits or salty snacks, 11 (6.3%) coffee and 5 (2.9%) carbonated drinks (table 4).

**Table 4:** Food offered to the children researched. HMII, Imperatriz-MA, Brazil, 2015

Food offered	< 6 months		From 6 to 12 months		Total	
	n	%	n	%	n	%
Juices	30	17.2	55	31.6	85	48.8
Fruits	23	13.2	30	17.2	63	36.2
Vegetables	10	5.8	40	23.0	50	28.7
Beans	7	4.0	36	20.7	43	24.7
Porridge	27	15.5	30	17.2	57	32.8
Meat	8	4.6	31	17.8	39	22.4

Sugar	30	17.2	32	18.4	62	35.6
Biscuits/salty snacks/sweets	16	9.2	29	16.7	45	25.9
Coffee	3	1.7	11	6.3	14	8.1
Carbonated beverages	2	1.2	5	2.9	7	4.0

Among the children younger than six months, 109 (62.6%) had received other liquids and artificial milks precociously; however, 158 (90.8%) had received breast milk. It was also observed that 112 (64.4%) children had received water, 74 (42.5%) tea, and 70 (40.2%) used pacifiers, and 92 (52.9%) used bottles or shakes.

Of the 174 children studied, 16 (9.2%) had not been breastfed. The prevalence of EBF by the sixth month was 20.1% (35), and 123 children had been given other foods before the sixth month of life besides breast milk. Among the children aged 6 to 12 months, 54 (31.0%) had received breast milk supplemented by other foods, and 120 had not received breast milk, but other foods only (table 5).

**Table 5:** Distribution of the prevalence of breastfeeding types. HMII, Imperatriz-MA, Brazil, 2015

Breastfeeding	< 6 months		From 6 to 12 months	
	n	%	n	%
Exclusive breastfeeding	35	20.1	-	-
Breastfeeding complemented with other foods	123	70.7	54	31.0
Not breastfed	16	9.2	120	69.0
Total	174	100	174	100

The results also indicated that 135 children (78.0%) had been breastfed in the first hour of life and 146 children (84.0%) had stayed with their mothers after the birth in the rooming-in maternity ward.

## DISCUSSION

The choice for EBF can be influenced by factors such as socioeconomic conditions, schooling, and marital, labor and obstetric status, maternal age and previous breastfeeding experience. These aspects affect the level of information that mothers have about breastfeeding, and most importantly, the level understanding of the information transmitted to them by professionals<sup>(8)</sup>.

Regarding the socioeconomic situation of a population, it is important to emphasize that factors such as living conditions and maternal age are the ones that most interfere in the mother's decision to breastfeed or not the child. These variables also interfere in the early search for the health service, during pregnancy, for prenatal care<sup>(9)</sup>.

Approximately one quarter of the mothers in the present study were adolescents, and a little over a third had low schooling, a factor that may have contributed to early weaning. The practice and continuity of BF can be directly motivated by a number of reasons such as: socioeconomic conditions of the family, schooling of and functional of the mother, marital status and type of childbirth<sup>(3)</sup>.

Mothers with higher income and schooling practice EBF more frequently until six months of life. In contrast, mothers with lower income and schooling use to breastfeed for longer, but not exclusively. It has been assumed that the greater knowledge of the benefits of EBF for mothers and children stimulate breastfeeding and its practice for the period of 6 months. However, with the end of the maternity leave, mothers return to work and abandon the EBF, while those women who do not work outside home are able to maintain breastfeeding<sup>(10)</sup>.

A descriptive study conducted in Viçosa-MG showed that the fact of mothers living with a partner also had a positive influence on the duration of EBF. The study also pointed out that young and primiparous mothers wean their children early due to lack of experience or maturity to care and breastfeed the child<sup>(8)</sup>.

The present research showed that 32.8% of the mothers were primiparous and 74.1% were housewives, but this fact did not contribute to increase the rates of EBF. In Uberlândia-MG, working outside the home and the use of artificial nipples were also considered as risk factors for early weaning<sup>(11)</sup>.

One of the main factors causing the abandonment of EBF is the lack of support from family members, when they adopt the belief that breast milk is insufficient for child growth, as well as the trivialization of women's suffering, especially by health professionals. It is essential that the health team makes an effort to care for these mothers by monitoring them and encouraging them to seek the health service, instructing them to return whenever they wish or when they have any doubts and, if necessary, passing all the information through written guidance for later reading at home<sup>(12)</sup>.

In this study, it was found that 16.1% of the mothers earned less than one minimum wage, and 32.8% were primiparous. A study carried out in Pelotas-RS indicated that children born to older mothers and with higher income, consequently greater experience and knowledge about breastfeeding, were more likely to be breastfed exclusively until the sixth month of life. Likewise, the fact that younger women breastfeed their children for less time can be attributed to inexperience or lack of preparation<sup>(13)</sup>.

The experience of breastfeeding for mothers may be different and unique in the case of each child. Two difficult moments can be identified: the beginning and the end, i.e. the establishment of breastfeeding and total weaning. Both times require support and information, which are essential for the health of women and children. Thus, health services and professionals play an essential role in informing and supporting women during prenatal care, childbirth, puerperium and child care<sup>(14)</sup>.

These professionals need, therefore, to be properly qualified and sensitized to offer pregnant and nursing women support through accessible guidelines, and must be able to promote and support breastfeeding so that this practice is effective and prolonged for, at least, up to 2 years of the child's life, according to recommendations of the MOH<sup>(8)</sup>.

It was verified in 2002 that approximately 97% of the children had started to be breastfed in the first hours of life in Brazil, but the introduction of other foods occurred prematurely, in the first weeks or months of life, with water, teas, juices and other milks<sup>(14)</sup>. In the present study, this situation was repeated: 85 children under six

months of age (70.9%) had received liquids, artificial milk or solid foods, and only 35 children (20.1%) were exclusively breastfed for up to six months.

In the present study we found that the supplementary feeding offered to children before six months of age included vegetables, fruits and even salty food. The "Food Guide for Under-two Children", published by the Pan American Health Organization (PAHO) and the MOH, recommends that complementary foods (meats, tubers, grain legumes, fruits and vegetables) be offered after six months of age, when children already have physiological maturity to chew, swallow and digest<sup>(15)</sup>.

Fruits and natural juices are considered healthy foods; still, the recommendation is that they be introduced into the child's diet after the sixth month of life. When started, three daily servings of fruits are recommended<sup>(5)</sup>.

It was also observed a growing increase in the use of foods not recommended for the age group, revealing the onset of inappropriate eating patterns that can be maintained at other stages of life. A study carried out in the Family Health Strategy (FHS) in the city of Acrelândia, in the State of Acre, found that sodium-rich processed foods with preservatives, sugar and fat, but poor in other nutrients such as instant noodles, sweets, salty snacks and soft drinks have been used by children from an early age<sup>(16)</sup>. Carbonated beverages, candies, lollipops and artificial juices are not recommended because they promote empty calorie accumulations due to the high sugar content, besides being cariogenic and interfering with the child's appetite. Moreover, contain dyes that may cause allergic reactions. Candies and lollipops present choking hazards, in addition to dyes that may cause allergy<sup>(5)</sup>.

In European countries, it has been observed that EBF up to the sixth month of life of children has been neglected, while an early introduction of complementary feeding (before 4 months of life) and frequent consumption of inadequate foods for this age group such as foods with high fat and sugar contents, happens<sup>(17)</sup>.

The second survey of the prevalence of breastfeeding in Brazilian capitals and the Federal District (II PPAM Capitals/FD) showed that a quarter of the children between 3 and 6 months were already consuming salty food and fruits. In the age group from 6 to 9 months, 69.8% of the children had consumed fruits and 70.9% vegetables/grain legumes<sup>(18)</sup>. A study was carried out in Picos-PI with children under 6 months of age found that 6.7% of the children had been given meat, 3.3% beans, and from 6 to 12 months, 50% had been given meat and 66.6% beans<sup>(19)</sup>.

Supplementary feeding should be rich in energy and micronutrients, without contamination and without excessive seasoning, but it should be only that - complementary - and should not replace the supply of breast milk until two years of age or more. The food must be well accepted by the child, be in the proper quantity, and within the consumption patterns for the family<sup>(6)</sup>.

The introduction of complementary foods after six months of life should be done with caution, and industrialized foods should be avoided at all costs. The rest should be introduced gradually, at intervals of three days to a week, preventing possible allergic reactions. Attention is important because the child's eating habits are formed during this period, and the frequency and type of food offered will certainly be determinant in the future food preferences of this child<sup>(19)</sup>.



The movements of the stomatognathic structures performed during the suctioning, chewing and mastication functions lead to adequate motor-oral development in the first years of life. Inserting supplementary feeding on the inappropriate date may adversely affect the child's present and future health. If the supplementary feeding method is started late, it may result in growth deficiency or anemia, as it may impair the growth and development of the facial foundation involved<sup>(2)</sup>.

In the case of children aged 6 to 12 months, three daily servings of vegetables/grain legumes are recommended. These are considered important foods and should be part of the early children's diet, so that they become accustomed to their use. Two daily portions of meat or eggs and one serving of beans are recommended<sup>(6)</sup>.

The use of unhealthy foods was also part of the diet of the children of the present study. Among children aged from 6 to 12 months, food intake of foods such as cookies and salty snack, processed juices, coffee and soda was also present.

The II PPAM Capitals/FD showed a high consumption of coffee (8.7%), soft drinks (11.6%), and cookies and/or salty snacks (71.7%) among children aged 9-12 months<sup>(18)</sup>. The MOH recommends that sugar, coffee, canned foods, fried foods, soft drinks, candies, salty snacks and other goodies be avoided in the first years of life. These foods are not suitable for the child's nutrition and, because of their pleasant taste, they may compete with other healthy foods. The use of sugar and fried foods should also be carefully observed, since when it is excessive, it can cause future problems. Thus, sugar should be offered to the child only after 1 year of age<sup>(5)</sup>.

Although the results showed a significant improvement in the breastfeeding situation in the last decade, it is necessary to promote EBF and longer breastfeeding complemented by other foods by means of strategies and actions linked to the basic health care sector. Regarding complementary feeding, studies in different regions of the country have found that complementary feeding is of low quality. National data obtained by the last National Survey of Demography and Health showed that in addition to the high frequency of children who ate foods of low nutritional value, there was also a low frequency of children consuming fruits, vegetables and meat daily<sup>(20)</sup>. Attention was drawn to the number of children under six months of age who were using artificial milk (23.6%), totaling approximately one-third of the children surveyed in this age group. This is a finding that causes concern for that early introduction of some foods such as milk can trigger allergic processes, and premature exposure to proteins in other foods besides human milk is associated with an increased risk of type 1 diabetes and atopic diseases such as asthma<sup>(15)</sup>.

It was also found that the most frequent causes mentioned by mothers for early weaning were the belief that the breast milk was insufficient for the child's growth and lack of family support. This is in line with a study conducted in Londrina in which mothers reported that they had introduced early complementary feeding because they believed that breast milk did not meet the needs of the baby<sup>(21)</sup>.

In the case of the reality of Imperatriz and neighbor region, the constant support of FHS professionals to these mothers is essential, not only during prenatal care, but also during the puerperium and the growth of this child. These professionals offer all the necessary guidance, no matter how insignificant they may seem at the moment, reinforcing the importance of previously neglected behaviors to multiparous women. In different countries with a socioeconomic development similar to Brazil, the training of

health professionals has been effective to positively modify maternal attitudes and practices regarding BF and complementary feeding<sup>(20)</sup>.

## CONCLUSION

The present study demonstrated that many children admitted to the HMII with infectious diseases had received complementary feeding precociously. It was also observed that the prevalence of EBF falls short of the recommendations of the MOH. The children also ate unhealthy foods too early, before six months of life, a practice that does not bring nutritional advantages but rather result in the onset of diseases.

However, among children over six months of age, when all had likely been given portions of healthy food such as fruits, vegetables, beans and meat, it was found that these foods were not part of their diets. This is clearly a contradiction to the recommendations of food supplementation in this age range.

Although most women starts breastfeeding their babies within the first hour of life, there is a significant drop in the rate of EBF up to six months of the infant's life. In view of the above, it is possible to conclude that the children under one year of age admitted to the HMII present an inadequate dietary pattern, falling short of the current recommendations proposed by the World Health Organization and the Ministry of Health.

Therefore, it is necessary to develop health education actions that promote the practice of EBF up to six months of age of children and to promote healthy eating after that age, so as to clarify myths, missbeliefs, and old misconceptions commonly observed in the community.

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