



## RESEARCH

**Industrialized food consumption by children under 2 years of age attended at a nutritionist's office at a municipal maternity hospital**

Consumo de alimentos industrializados por crianças menores de dois anos em um consultório de nutrição de uma maternidade municipal

Consumo de alimentos industrializados por niños más pequeños de dos años en una consulta de nutrición de maternidad municipal

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## ABSTRACT

**Objective:** To evaluate industrialized food consumption by children under 2 years old attended at a nutritionist's office. **Method:** Quantitative descriptive study, conducted in a municipal maternity hospital. The sample was composed of 175 children. The instrument used for collecting data was a structured 24-hour recall questionnaire on the children's food intake. The data were processed by using the SPSS software, 17.0, and the graphs were drawn in Excel. **Results:** The consumption of industrialized food starts early in life, between 4 and 6 months of age, with foods such as yoghurt (25.75%) and processed soup (6.06%) and increases with age, up to 20% for industrialized coffee and soup; 76.47% for yoghurt; 32% for instant noodles and 24% for coffee, when the child is over 12 months. **Conclusion:** The results show the need to prioritize nutritional education actions towards this context. **Descriptors:** Complementary feeding, Industrialized food, Children, Breastfeeding.

## RESUMO

**Objetivo:** Avaliar o consumo de alimentos industrializados por crianças menores de dois anos em um ambulatório de nutrição. **Método:** Estudo quantitativo, de natureza descritiva, realizado em uma maternidade municipal. A amostra constuiu-se de 175 crianças. O instrumento para coleta de dados foi um questionário estruturado, tipo recordatório de 24 horas sobre o consumo alimentar das crianças. Os dados foram digitados e processados no programa SPSS, versão 17.0 e os gráficos foram elaborados no Excel. **Resultados:** O consumo de alimentos industrializados inicia-se de forma precoce, na faixa de 4 a 6 meses, com alimentos como iogurte (25,75%) e sopa industrializada (6,06%), e aumenta com a idade, chegando a 20% para o café e sopa industrializada; 76,47% iogurte; 32% macarrão instantâneo e 24% para o café, na idade acima de 12 meses. **Conclusão:** Os resultados revelaram a necessidade de se priorizar as ações de educação alimentar voltadas para esse contexto. **Descritores:** Alimentação complementar, Alimentos industrializados, Criança, Aleitamento materno.

## RESUMEN

**Objetivo:** Evaluar el consumo de alimentos procesados en niños menores de dos años en una nutrición ambulatoria. **Metodos:** Cuantitativo, de carácter descriptivo, realizado en una maternidad municipal. La muestra es constiuiu 175 niños. El instrumento de recolección de datos fue un cuestionario estructurado, como recordatorio del consumo de alimentos de los niños las 24 horas. Los datos fueron introducidos y procesados con el programa SPSS, versión 17.0, y se elaboraron los gráficos en Excel. **Resultados:** El consumo de alimentos se inicia muy temprano en la gama de 4 a 6 meses con alimentos tales como el yogur (25,75%) y sopa industrializado (6,06%) y aumenta con la edad, alcanzando 20% para el café y sopa industrializados; 76,47% yogur, 32% y 24% de los fideos instantáneos para el desayuno, a la edad de 12 meses. **Conclusión:** Los resultados pusieron de manifiesto la necesidad de priorizar las acciones de educación alimentaria dirigidos a este contexto. **Descriptores:** Alimentación complementaria, alimentos industrializados, Infantil, Lactancia materna.

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## INTRODUCTION

Proper nutrition in childhood is important for the growth and development of the child, at the same time it constitutes one of the prevention factors of some diseases of this stage. In addition, it is from there that are formed the habits and food preferences that, many times, will continue in adolescence and adulthood.<sup>1,2</sup>

Exclusive breastfeeding (BF) until 6 months, extending up to 2 years or more, combined with the introduction of complementary feeding unbalanced and balanced are recommended by the World Health Organization (WHO) as important measures of public health with actual impact in reducing the risk for the development of future diseases.<sup>3</sup>

In addition, the Ministry of Health (MOH) has drawn up in 2002, along with the Pan American Health Organization (PAHO), recommendations expressed in "Ten steps to a healthy nutrition: food guide for children under two years old", published in a technical manual to subsidize the health care professionals to promote healthy eating practices.<sup>4</sup>

From six months of age, that the majority of children reach the general and neurological stage of development that enables them to receive other foods aside from breastfeeding. The adequate complementary feeding of children in breastfeeding is essential for the growth and development of the same, therefore, becomes a fundamental component for the food and nutritional security of the population.<sup>5,6</sup>

The introduction of industrialized food since the beginning of life, as well as the early discontinuation of breastfeeding, contribute to the impairment of the growth and development of the child, in addition to providing the decrease of immunological protection and the triggering of allergic processes and disorders.<sup>7</sup>

### *Industrialized food consumption...*

There is strong evidence in the literature that the early introduction of foods with low nutritional value, especially the over-supply of carbohydrates (especially simple carbohydrates) and lipids, both in quantity and quality, may predispose to the development of chronic diseases. They include obesity, diabetes, hypertension, among others, and/or lead to nutritional deficiency, represented by malnutrition, infectious diseases and specific needs of micronutrients, especially iron, zinc and vitamin A, and thus cause effects on health and well-being of the child that may be extended into adulthood.<sup>8</sup>

Data from the II Survey of the Prevalence of Breastfeeding in the Brazilian capitals and the Federal District (PPMA), in 2009, showed early introduction of processed foods, even in the age range of three to six months, with a trend of increased consumption as age increases. In the case of coffee and soft drinks, the consumption of both becomes more expressive in the range of 6 to 9 months (4.9 %), reaching 8.7% and 11.6 %, respectively, in the range of 9 to 12 months. When it comes to the consumption of crackers and snacks, the consumption in the range of 3 to 6 months was 8.9 %, reaching 71.7% in the age group of 9 to 12 months.<sup>9</sup>

Under this approach, the objective of this study was to evaluate the consumption of industrialized foods in children younger than two years in a doctor's office of nutrition of Teresina-PI, with views to check the conformity of them in relation to recommendations advocated in "*Ten Steps of Healthy Nutrition for children under two years*".<sup>4</sup>

Therefore, it is believed that studies to assess the introduction of processed foods in the diet of very young children can contribute to actions aimed at improving the quality of nutrition.

## METHODOLOGY

Descriptive Study, conducted in a Nutrition's office of a municipal maternity hospital of a capital, with children in the age group of zero to two years. It is complementary feeding clinic where children are referred who are already receiving other foods besides breast milk or who are already in the weaning process. On average 320 children are consulted at this clinic per month. The choice of location was due to the fact that the institution attends the target audience of this study. The sample was composed of 175 children, in the age group of zero to two years, assisted at the Nutrition office of this maternity hospital. The calculation of sample size was obtained using the formula proposed by Martins (2011)<sup>10</sup>, with a confidence level of 95% and a margin of error of 5%. It was a simple random sample. The subjects were selected through a daily drawing Based on the appointment-scheduling book. There were 10 selected participants per day until reaching the calculated sample.

Data collection occurred during the period from April to May 2013. The mothers were interviewed in the maternity hospital by a two-student Nutrition team previously trained on the interview technique. The interviews were carried out in a place specially designated for this purpose, as indicated by the dietitian of the Health Unit, and occurred before or after consultation with the professional in accordance with the convenience for both parties.

The interview was performed by means of two structured questionnaires and adapted for the present study, a socio-economic and another referring to feeding practices. As for the socio-economic aspect, the questions focused on: age of the mother, the child's age, place of residence, education level, work outside the home, marital status, family income, number of persons residing

*Industrialized food consumption...* in the household, number of children and economic class to which it relied on Brazil criterion used by the Brazilian Association of Research Companies.<sup>11</sup> Questions relating to food practices were of type 24-hour dietary recall having as base the questionnaire applied in the II Survey of the Prevalence of Breastfeeding in Brazilian State Capitals and the Federal District (II PPAM).<sup>9</sup> Regarding the issues concerning the feeding practices, questions were directed regarding the consumption of industrialized products (yogurt, instant noodles, soft drinks, coffee, ice cream, soup industrialized, packaged juice, boxed juice, industrialized fruit pulp).

Data were entered and processed with the statistic program SPSS, version 17.0. To analyze the association between the study variables the chi-square test was used and Fisher exact test was used when the table results were under five, with a significance level of 5%.

The work was submitted initially to the Ethics Commission of the Municipal Foundation of Health (FMS) and after assessment and authorization it was forwarded and approved by the Research Ethics Committee (CEP) of the University Center UNINOVAFAPI, CAAE No 09865112.8.00005210, as it provides for the Resolution No. decree 196/1996 of the National Council Health. The participants signed an informed Free and Informed Consent Form (IC). There were no refusals to participate in the study.

## RESULTS AND DISCUSSION

The sample consisted of 175 children under two years prevailing males with 50.29%. Of these, more than half were less than 6 months of age, 54.85 %. The socio economic characterization is described in Table 1. As it was observed in this table, 81% of mothers had schooling higher than the elementary school, being that 49.14% of the

Cardoso EKS, Sousa MRR, Ramos CV, *et al.* mothers were over 26 years of age, only 21.14% worked outside the home and 97.15% received a monthly income less than or equal to a minimum wage (Table 1).

Table 1: Distribution of sociodemographic variables of children receiving care at a nutrition's office. Teresina-PI, 2013.

		No.	%
Child's age range (months)	0 a 3	30	17.14
	4 to 6	66	37.71
	7 a 9	19	10.86
	10 a 12	32	18.29
	More than 12	28	16.00
Gender	Female	87	49.71
	Male	88	50.29
Mother's age range (years)	less than 20	23	13.14
	20 a 25	52	29.71
	26 a 35	86	49.14
	more than 35	14	8.00
Schooling	<= Elementary	33	18.86
	> Elementary	142	81.14
Works outside of home	Yes	37	21.14
	no	138	78.86
Family Income (MW)	< 1	19	10.86
	1 a 2	151	86.29
	3 a 5	5	2.86
	6 a 10	-	-
Economic class	A	1	0.57
	B	1	0.57
	C	5	2.86
	D	168	96.00
	E	-	-
Total		175	100.00

Source: Direct research

The data relating to the exclusive consumption of breast-milk, water, teas and other milks of children are presented in Figure 1. It was observed that the introduction of water, tea and other milks started in the range of 0 to 3 months. In this range, only 33.3% of children are in exclusive breastfeeding, and only 10.7 %, in the range of 4 to 6 months. A given concern is to see that balances account for 43.58% of children drink another milk in the age group of 0 to 3 months, a fact that remains in another age, revealing the early introduction of industrialized foods. In addition, a gradual increase was observed in the consumption of other milks as the age progresses, reaching the percentage of 96% in age above 12 months.

Industrialized food consumption...

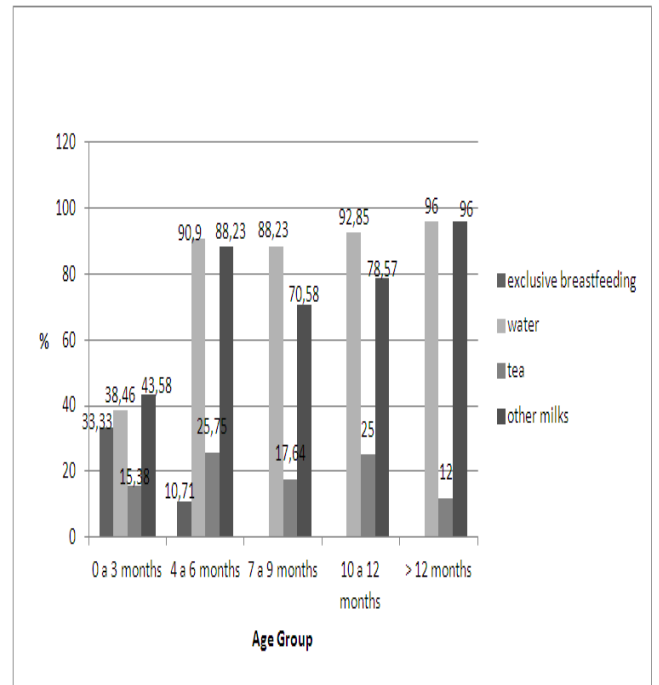


Figure 1: Percentage of children who consume EBF, water, tea and other milks per age of the child. Teresina-PI, 2013.

Figure 2 shows the consumption of natural juice and juice packaged in the age range of 4 to 6 months, 42.42% and 3.30 %, respectively. In the age group of 7 to 9 months, the consumption of natural juice reaches 41.17 %. Powdered juice reveals a consumption of 17.85% and 28% in the age group of 10 to 12 months and greater than 12 months, respectively.

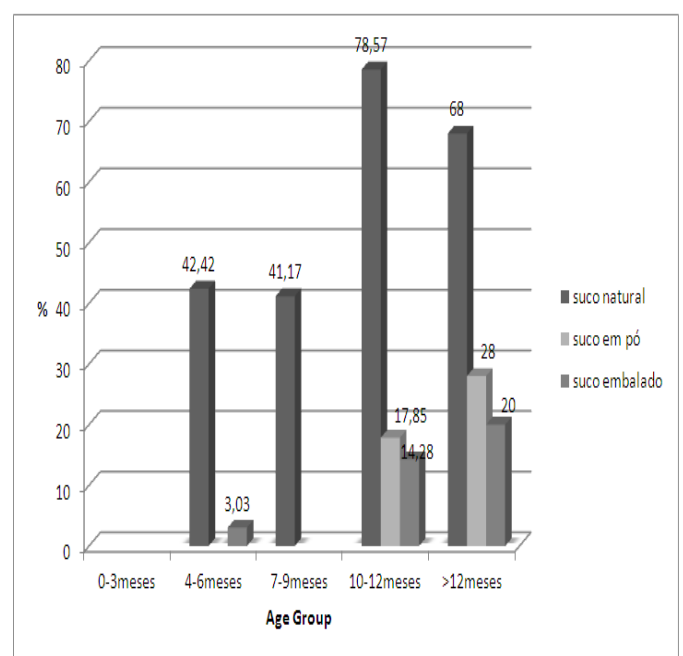


Figure 2: Percentage of children who consume natural juice, powdered juice and juice packaged by the child's age range. Teresina-PI, 2013.

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Figure 3 shows the consumption of fruit/vegetables and table food. The data reveals the consumption of fruits, vegetables and table food, in age group of 4 to 6 months, 64.7 %, 36.36% and 36.36 %, respectively. When comparing the food consumption between the age ranges presented, there is a trend of increase in the consumption of foods researched, demonstrating that children aged ten to twelve months present an increased consumption of /vegetables in 92.85% and children with age greater than 12 months present the consumption of fruit 80% food with salt to 100% (Figure 3).

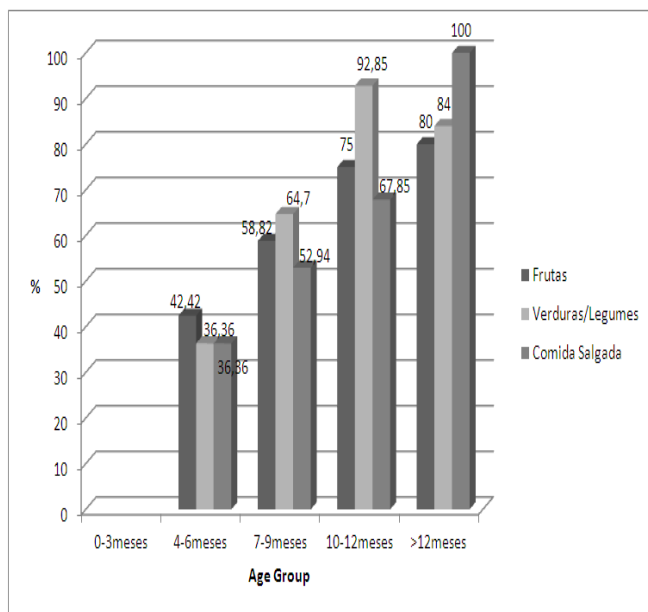


Figure 3: Percentage of children who consume fruit/vegetables, table food by the child's age range. Teresina-PI, 2013.

In relation to the consumption of industrialized foods (Figure 4), it was found that foods such as yogurt and industrialized soup are introduced early, in the range of 4 to 6 months, in the percentage of 25.75% and 6.06 %, respectively. Specifically in the case of the yogurt, this percentage is 76.47% in the range of 7 to 9 months, and remained at this level in above the age of twelve months. It was also found that the trend of increased consumption of all industrialized foods investigated as the age increases, with the highlight for the instant noodles that reaches the 32% in age above 12 months; the soup industrialized with the percentage of 20% and the

*Industrialized food consumption...* refrigerant, in the same proportion of 20 %, for this age group. It is noteworthy that the consumption of coffee that starts early at the age of 10-12 months (7.14 %) and arrives at 24% above the age of 12 months. In addition, it was observed that the consumption of soft drinks in the age range of 10-12 months and over 12 months with the percentage of 14.28% and 20 %, respectively.

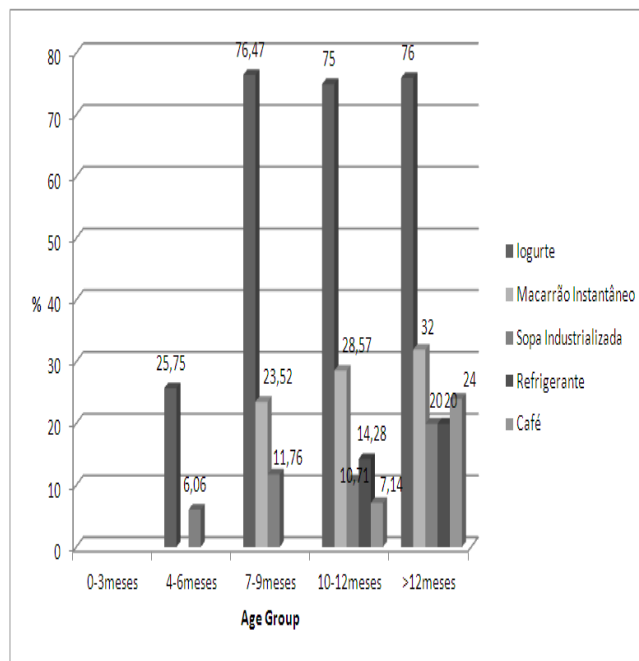


Figure 4: Percentage of children who consume yogurt, instant noodles, soup, soft drinks, coffee industrialized by the child's age range. Teresina-PI, 2013.

The results of the social and economic situation of the families of the children studied revealed a low-income population, which could hinder the access to healthy food. There is an increase in the share of fruit and vegetables in total purchases of food, with the decrease in the price of these foods or with the increase of family income.<sup>12</sup>

In this study it was found that an early introduction of water, teas and other milks in children younger than six months. It was observed a significant consumption in the first month of use of teas in the feeding of children surveyed, increased gradually until the sixth month of life. 23.6% of children under 12 months drank water and 24.8% drank tea, being with an increased supply of water in the subsequent months.<sup>13</sup>

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A study carried out in Feira de Santana, Brazil in 2004, revealed that children less than or equal to four months, non-breastfed children, when compared with the breastfed infants, showed significantly higher prevalence in the use of water and teas.<sup>14</sup> Another study conducted in the city of Sao Paulo, Brazil observed that water and/or tea was the food introduced earlier for greater proportion of children (72.1 %) in the age group of zero to six months.<sup>15</sup> In a survey conducted in the city of Florianopolis SC, Brazil it was found that the introduction of modified milk in replacement to breastfeeding in 190 children less than two years old (36.8 %).<sup>16</sup> These findings corroborate with the found In this study, although it should be emphasized that the children referred to this nutrition's office are no longer in exclusive breastfeeding.

The children must have exclusive breastfeeding up to six months of age. That is, until this age, the infant should consume only breast milk and should not make any other complementary food or drink, not even water. From the age of six months, all children must receive complementary foods and maintain breastfeeding. Children should continue to be breastfed, at least until they reach two years of age.<sup>17,18</sup>

In relation to natural and artificial juices, there was a consumption in children from four to six months rising gradually according to the age range. A study carried out in Curitiba, Brazil, by the Municipal secretary of Health, in 2010, found the consumption of natural and artificial juices in children younger than 12 months, (10.8 %) and (7.4%), respectively.<sup>19</sup> Although there is no need to offer the child liquid in the phase of exclusive breastfeeding before six months of age, the research carried out compared to the other studies shows how it is evident that the number of children who receive juices in this age range.

*Industrialized food consumption...*

On the consumption of vegetables, legumes and table food there has been a tendency of increase of consumption according to age group, and that the same were offered to children early, as you can check the beginning of the introduction of these foods in the age range of four to six months. A study conducted in Jequitinhonha-MG, Brazil, in 2002, found the consumption of vegetables and legumes in 60.9% of children.<sup>20</sup> The data of the II Survey of Breastfeeding Prevalence in Brazilian State Capitals and the Federal District (2009)<sup>9</sup> found that 20.7% of children aged between three and six months already consumed table food. Research carried out among children living in the urban area of Acrelândia-RN, Brazil showed that 29.6% of children have not yet received any meal with salt in the age group of six to eight months.<sup>21</sup> Another study conducted in 136 municipalities in the state of Sao Paulo, Brazil, with 24,448 children aged 6 to 12 months, it was observed that in the age range of 6 to 9 months, 48% of children still haven't consume a meal with salt.<sup>22</sup>

Based on the data of the studies cited above, the research showed that the children are receiving a food supply, such as the table food, very early, which could hinder their growth and development.

This study revealed that children, at the age of four to twenty-four months, consume industrialized foods such as yogurt, instant noodles, industrialized soup, soft drinks and coffee. The Ministry of Health<sup>18</sup> recommends for breastfed children, two to three meals with complementary foods per day, from six to eight months of age; and three to four times per day, of nine to twenty-four months, with additional nutritious snacks (small pieces of fruit or bread, couscous, homemade cake, cassava) twice a day from twelve months onward. If the energy density or the amount of complementary foods per meal is low, or if the child is completely weaned, a greater frequency of meals may be required. It is

Cardoso EKS, Sousa MRR, Ramos CV, *et al.* important to emphasize that the meals and complementary foods do not substitute, but rather complement the breast feedings.

A study conducted in the city of Florianópolis SC, Brazil, with 516 children younger than two years ago, in 2004, examined the consumption of yogurt in children in the age range of seven months and found a percentage of 62.25%, and instant noodles in the age range of six months, 75 %.<sup>16</sup> Based on the data, we can analyze that the consumption of yogurt by children of the nutritionist's office in Teresina was greater than the study already cited and the consumption of instant noodles was lower.

Another study carried out in Campinas-SP, Brazil, in 2004, it was found the introduction of industrialized soup in age range of eight months. By using the study above as a basis, it can be verified that the consumption of soup by the children analyzed in this study is with a higher index, since its introduction began in the age range of four months.<sup>24</sup>

The II PPAM<sup>9</sup> found that only 48.9% of the children analyzed received adequate complementary feeding. In addition, over half of the children were already receiving infant formula or another type of milk before the sixth month of age. In the last National Survey of Demographics and Health (2006), it can be observed that the percentage of children aged zero to six months, which are already with complementary feeding, is 52 %, while 35.6% of children aged 6 to 8 months had not consumed any table food in the last 24 hours prior to the survey. However, the introduction of other foods and beverages is early, occurring during the first weeks or months of life.<sup>9</sup>

Another highlight is the presence of coffee in nutrition of these children in the age range of 10 to 12 months and above 12 months, although it appears in percentage as well greater than that found in II PPAM<sup>9</sup>, scoring 8.7% in age range of six to nine months. As for the consumption of soft

*Industrialized food consumption...* drinks, even not being the ideal, the percentage in the present study it was found high in the age range of 10 to 12 above 12 months. It can be said that in the cases cited the process of introduction of complementary foods is not advisable and may be inadequate from the nutritional point of view.

Reported that soft drinks contain polyphenols that decrease the absorption of non-heme iron, besides contributing to childhood obesity by its wide use.<sup>15</sup> The market presents a great diversification of products and prices, thus enabling the access with cost many times lower than the natural foods such as fruit juice. As far as the consumption of soft drinks, it was found in the study 24.28% distributed in age ranges of ten months the greatest of twelve months, noting that the percentage was greater than that observed for the II PPAM<sup>9</sup>, in relation to a set of Brazilian state capitals and Federal District that were 4.9% and 11.6 %, respectively.

The high consumption of soft drinks among children is worrying, as the Chronic, Non-Communicable Diseases (CNCDs) have a latency period to occur, which may arise in the medium or long term. In addition, the child audience is the main target of indiscriminate advertisements linked to food and sugary drinks.<sup>24</sup> The media exerts a strong control on many behaviors of children. The foods promoted in advertisements are characterized by being practical, since they are 82.2% for immediate consumption, thus facilitating the high demands of activities in family and professional contexts, children aged less than five years are easily influenced by the media<sup>25</sup>. Thus, intersectoral interventions aimed at this audience to promote healthy eating are needed to address the CNCD, since the habits established in childhood are more likely to remain in adolescence and adulthood.

According to the guidelines contained in the "Ten steps to a healthy nutrition" one should avoid sugar, coffee, canned food, fried food, soft drinks,

Cardoso EKS, Sousa MRR, Ramos CV, *et al.* sweets, salty snacks and other treats in the first years of life. <sup>4</sup> In view of this, the fact which merits concern is that most of the children studied in this research ingest yogurt, noodles, soup industrialized, coffee and soft drinks.

According to the MH should be offered different foods for children with more than six months, such as fruit and table mashes to ensure the supply of all the necessary nutrients for normal growth and development. The inclusion of fruits and vegetables in nutrition of children is of great importance, since they are the main sources of vitamins, minerals and fiber, for this reason should be stimulated your daily consumption.<sup>4</sup>

Thus, it is worth pointing out the need for a continued work to encourage appropriate complementary feeding and nutritional monitoring this clientele, with a view to increasing the consumption of these foods.

The results of this study indicate a need for intervention, and advice on infant feeding on the part of health professionals, considering that the majority of children starting complementary feeding in an unsuitable manner, which can have negative repercussions on their health.

## CONCLUSION

This study showed high frequency of consumption practices and disordered eating in children less than two years of age. Possibly leading to increased risk of future development of chronic diseases.

The introduction of water, teas, juices, other milks and complementary foods occurred early on; a fact that hinders the growth and development of the child. It shows the inevitable promotion and encouragement of appropriate breastfeeding techniques and healthy nutrition.

However, it was possible to observe a high percentage of children consuming fruits,

*Industrialized food consumption...* vegetables/ vegetables and food salt, in particular in the range above the age of nine months, as is recommended by the Ministry of Health and this shows the positive result of the work done at the office of complementary feeding which these children are being monitored.

Despite the advances that have been reflecting over three decades in the results of the National Policy for Breastfeeding, created in 1981, we are far from achieving the targets proposed by the WHO and MS breastfeeding up to the end of the second year of life or more and exclusive breastfeeding until the sixth month of life. In addition, it was verified in this study the need for interventions to promote healthy nutrition habits during the first year of life.

Despite the methodological differences between the studies that were used to compare with the results achieved in this study, it was found that the consumption pattern of industrialized foods by children with less than two years of age, monitored by the nutritionist's office, is greater than that found in other studies analyzed, especially in those that refer to foods such as yogurt, instant noodles, coffee and soft drinks.

Under this approach, it is important to emphasize the need for investments in food education actions that prioritize the appropriate complementary feeding and timely as a way to improve their eating habits, prevent the onset of diseases in adulthood, and consequently, the improvement of the quality of life of the assisted clientele.

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