DOI: http://dx.doi.org/10.12957/demetra.2015.14141

Nutritional status of children under five years of age who have attended an institutional nursery

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Abstract

Aim: To assess the nutritional status of children under five years of age who have attended an institutional nursery in the Federal District, Brazil. *Methods*: The sample consisted of children who have attended the institutional nursery between March 2010 and December 2013. The children and their mothers' socioeconomic, environmental, demographic, anthropometric and biological data were analyzed and a Food Frequency Questionnaire was applied in order to assess the children's food intake. To assess the diet overall quality, a score based on the Recommended Foods Score was used. *Results*: The sample consisted of 26 mothers and 28 children. As for the mothers, 67.9% were aged 31 to 40 years; 67.9% had postgraduate degrees; 85.7% were earning over 10 Brazilian minimum wages; 75% were married; 85.7% were normal weight and 14.3% were overweight. As for the children, their mean age was 29.44 months (± 14.18); 67.9% were exclusively on breast-feeding up to 6 months and 50% were weaned between 12 and 15 months; 88.9% of the children were eutrophic and 11.1% were at an overweight risk; 28.6% presented consumption of sugars and sugary drinks above what was recommended; 32.2% presented consumption of fruit below what was recommended and 67.9% had vegetable consumption below the recommended by the Brazilian Society of Pediatrics; 10.7% often had meals watching television and 21.4% never had meals watching television. The diet average score was 23.25 ± 2.31 points out of a total of 28. *Conclusion*: Attending an institutional nursery can positively contribute to children's nutritional status and eating habits.

Key words: Nutritional Status. Children. Food Consumption. Anthropometry. Institutional Nurseries.

Introduction

An increasing number of children need to spend part of the time in nurseries or day care centers. In Brazil, from 2000 to 2010 there was a 14% increase in the frequency of children aged 0-3 years and 28.7% of children aged 4-5 years in day care centers.[1] This possibly stems, among other factors, from the growing integration of women in the labor market.

In this context, the nursery and the day care center receive special attention because it is early in life that eating habits are established. They are influenced by various genetic, environmental and psychological factors that are subject to change. There are genetic predispositions to preferences for certain foods over others, but the experiences during life stages are able to shape them.[2]

There are many factors that contribute to the definition of dietary habits such as breast-feeding, weaning, parental influence, social and emotional contexts, and media influence.[3] The focus of this work is on breast-feeding, food intake and nutritional status.

Breast-feeding is recommended for the child for two years or more and must be unique up to six months. Exclusive breast-feeding (EBF) is sufficient to meet the nutritional and immunological needs and contribute to increase the emotional bond between mother and baby, encourage proper weight gain and prevent various infections, diseases and death.[4]

According to research on Breast-feeding in Brazilian Capital Cities,[5] the prevalence of exclusive breast-feeding in children under six months in the Brazilian Federal District was 50%, and complementary breast-feeding up to one year, 65.4%. The survey also reveals an increase in the prevalence of exclusive breast-feeding from 1999 to 2008. In the Brazilian Federal District, in 1999, the median was 45 days; in 2008, there was an increase to 77.7 days, i.e., the increase was 72.67%.[6]

In addition, breast-feeding has the ability to impart flavors from the food eaten by the mother, encouraging better later acceptability of food by the child. Thus, if the mother's choices are healthy, the child will find it easier to accept such food.[7]

After six months of age, the child's nutritional needs change, making necessary the complementary introduction of healthy and adequate food in order to meet such demands.[4] This is an important time in a child's life because it will contribute to the formation of their eating habits, growth and development. The professional accompanying this process has the role of emphasizing the importance of this phase and giving support and guidance necessary for the mothers' adhesion to be the biggest possible.[8]

In Brazil, food intake of children aged six to 59 months is characterized by a high intake of foods high in fats, salt and sugar such as in soft drinks, snack foods, fried foods and sweets. In parallel, there is a low consumption of healthy foods like vegetables and meat.[9]

These data confirm the occurrence of the food and nutritional transition that has taken place in the world. There has been a change in both the population's dietary pattern as the nutritional status. If previously the main scenario was malnutrition, now the concern is on overweight and obesity. The nutrition transition is characterized by a high consumption of foods with high energy density but low in nutrients, at the expense of low intake of foods rich in fiber, vitamins, and minerals such as fruits, vegetables and whole foods, in addition to decreasing physical exercise practices. As a result, it is possible to observe the development of diseases related to deficiencies or nutritional disorders like anemia, and deficiency of vitamins and minerals, in addition to the increase in chronic diseases like diabetes, hypertension and obesity.[10]

The influence of media on children also contributes to the formation of eating habits and consequently the nutritional status. Television, by means of advertising and announcements, influences the choice of food by the child, encouraging the consumption of processed foods which, as a rule, have a high calorie content, are high in sugar and fat, and low in concentration of vitamins and minerals.[11] Therefore, it is important that they do not spend too much time watching television, but take the time to playing and other entertaining and educational activities, as well as learning, and then they will be less susceptible to the negative influences exerted by the media and have more possibilities of maintaining body weight and health.

The combination of these and other aspects leads to the formation of the child's nutritional profile, which is the objective of this study, from the analysis of children younger than five years of age who have attended an institutional nursery in (federal capital of Brazil and seat of government of the Federal District) Brasília.

Methodology

The literature review was performed with collection of articles in the databases SciELO, Medline and LILACS, considering years 2000 to 2014. The terms used were: breast-feeding, food consumption, media influence and nutritional profile. Articles were selected in English and Portuguese. Initially, the articles were filtered by title relevance; afterwards, the abstracts were read, and those who had relevant information to the literature review were selected for complete reading. After a complete reading, articles relevant to integrate the review were selected. Then similar information found in each was grouped, in order to produce a critical summary of each topic.

It is a transversal study, in which the target audience was composed of mothers with children under five years of age who attended an institutional nursery in the Brazilian Federal District. Admission of children in the nursery occurred around four to six months of age, and dismissal at one year to a year and three months of age. The choice of the nursery was for convenience and the sample was universal. The sample consisted of children who attended the institutional nursery chosen in the period of March 1, 2010 (when the nursery opened) until December 20, 2013, the period before the start of data collection, totaling 77 mothers and 82 children. In total, 66 mothers received the e-mail, as 11 e-mails returned to the message box.

Children were included who attended the nursery and whose mothers continued to work with the public body. As an exclusion criteria, it was determined that mothers who no longer worked in the institution would not have their children participating in the research.

The first contact was done by e-mail, addresses provided by the nursery staff, in order to explain the research and invite mothers to participate in the study in person or via e-mail, according to their preference.

The physical meeting took place on February 21, 2014 within the institution itself. E-mails were sent in advance (on Feb 6th) and contact with mothers who preferred a face to face meeting was kept, in order to remind them of the collection date. Seventeen mothers attended the meeting in person.

The collection via e-mail was held between February 24 and March 21, 2014. All guidelines were detailed and sent with the questionnaires, and any questions were answered via e-mail. Nine mothers participated in responding to the questionnaires by e-mail.

Both in person and via e-mail, an informed consent form that explained the research and guaranteed the identity confidentiality of the participants was provided. After acceptance, the collection instruments were delivered (two self-report questionnaires).

The first questionnaire was developed with the assistance of the nutritionists staff of the local nursery. It had 28 questions and the variables addressed were: socioeconomic (marital status, education, household income, number of people living in the household), environmental (if the child usually ate meals watching television), demographic (maternal age, child's age, number of children), biological (type of delivery, birth weight, pre-pregnancy weight, gestational age, guidelines receipt on complementary feeding) and anthropometric (weight and height upon leaving the nursery and current ones). All questions were objective or had a blank field for the mother to write what was required, such as a child's weight and height.

To assess the adequacy of the questionnaire before its application in the institution, a pilot test was conducted with seven mothers who did not participate in the survey, but had similar characteristics to the ones in the study group (age, education, household income and children's age). There was no need to change the material.

For the results assessment, the children were divided into two age groups (1-3 years and 4-5 years), according to the division presented by the Brazilian Society of Pediatrics,[12] as shown in Table 1. Since then, aspects of dietary intake, nutritional status and healthy eating score were analyzed.

Table 1. Daily food servings of recommendation per age group according to the Brazilian Society of Pediatrics[12]. Brasil, 2013.

Food group	6 – 11 months	1 – 3 years	Preschool (4 – 8 years)	Adolescents and adults
Rice	3	5	5	5 to 9
Beans	1	1	1	1
Vegetables	3	3	3	4 to 5
Fruit	4	3	4	4 to 5
Meat	2	2	2	1 to 2
Milk and milk products	Breast milk	3	3	3
Sugar and sweets	0	1	1	1 to 2
Oils and fats	2	2	1	1 to 2

The assessment of the habitual dietary intake of children was carried out by a Food Frequency Questionnaire (FFQ) qualitative validated for children aged two to five years old. The FFQ has 57 food items, divided into ten categories, namely: cereals (rice, bread, potato chips, instant noodles); legumes; vegetables; fruits (fruits in general and fruit juice); meats and eggs; dairy products; sugar and sweets; snacks and preparations (pizza, ham and cheese sandwich, hamburger); sugary drinks; and others.[13]

To assess these data, a healthy diet score based on the Recommended Foods Score (Recommended Food Count – RFC) was used, according to which, each food in the recommended food list used would be equivalent to one point. This scoring method was developed by Kant et al.,[14] and McCullough et al.,[15] in order to check the overall quality of the diet via an FFQ. The list of recommended foods comprised 28 foods, therefore the highest score gained by each child would be equivalent to 28 points.

In this study, the Recommended Food Count (RFC) was performed according to the methodology by these authors and was adapted to the recommendations of the Brazilian Society of Pediatrics,[12] as shown in Table 1, which is divided into rice, beans, vegetables, fruit, meat, dairy products, sugar and sweets, and oils and fats. For the classification to be as faithful as possible, the group of sugary drinks in the FFQ was included in the sugars and sweets group.

To thank the participating mothers, a material developed with the help of the site nutritionist was handed, containing: guidelines for a healthy diet, a month menu proposition and healthy recipes to offer snacks to children.

The data were analyzed using the programs Excel®, AntrhoPlus (version 1.0.4) and Statistical Package for the Social Sciences – SPSS® (version 21) for a descriptive statistical analysis: measures of central tendency (mean) and measures of dispersion (standard deviation), as well as nutritional status classification.

This project was approved by the Comitê de Ética em Pesquisa (Research Ethics Committee) at Faculdade de Ciências da Saúde da Universidade de Brasília, report no. 394040.

Results

The invitation to participate in the survey was sent to 66 mothers, of which 26 responded (39%), being nine answers via e-mail and 17 face to face. Among the participants, two had two children, totaling 28 children.

Most mothers (67.9%) were in the age group 31-40 years; 85.7% were eutrophic and 14.3% were overweight. Regarding the type of delivery and number of children, 75% had had Caesarean section (C-section), 53.6% had only one child and 28.6% had two children. Most were married (75%), had a postgraduate degree education (67.9%) and earned over ten monthly Brazilian minimum wages (85.7%). The children sample mean age was 29.44 months ± 14.18, and 60.7% were female. The average length of stay in the nursery was 6.43 months.

67.9% of children had remained on exclusive breast-feeding (EBF) until six months of age; 50% were weaned at 12 to 15 months, and 7.1% were weaned between 21 and 24 months, as shown in Table 2.

Table 2. Breast-feeding prevalence, weaning and type of guidance for food introduction for children attending an institutional nursery between 2010 and 2013, Brasília-DF.

Variable	n	%
Staying in EBF		
EBF up to 1 month	1	3.6
EBF up to 4 months	2	7.1
EBF up to 5 months	5	17.9
EBF up to 6 months	19	67.9
EBF for more than 6 months	1	3.6
Weaning period		
Weaning from 3 to 6 months incomplete	3	10.7
Weaning between 6 and 9 months incomplete	1	3.6
Weaning between 9 and 12 months incomplete	5	17.9
Weaning between 12 and 15 months incomplete	14	50.0
Weaning between 15 and 18 months incomplete	0	–
Weaning between 18 and 21 months incomplete	0	–
Weaning between 21 and 24 months incomplete	2	7.1
Weaning between 24 and 27 months incomplete	2	7.1
Weaning between 27 and 30 months incomplete	1	3.6
Guided to feeding introduction		
Pediatrician	9	32.1
Nutritionist	9	32.1
Pediatrician and nutritionist	9	32.1
Family / friends	1	3.6

In relation to nutritional status, all children in both age groups were classified as being in the appropriate weight and height for their age. From the group of children aged one to three years, 87% (20 subjects) were classified as eutrophic and 13% (3 subjects) at risk of becoming overweight; and from the group of children aged 4-5 years, all were classified as eutrophic according to the weight curve for stature.[16]

The results of the Food Frequency Questionnaire (FFQ) indicated that most children, in both age groups, had the consumption of cereals (1-3 years, 70%, and 4-5 years, 100%), vegetables (1-3 years, 66%, and 4-5 years, 75%) and snacks (1-3 years, 100%, and 4-5 years, 100%) lower than the recommended levels. The group of meat, for ages 1-3 years (62%); the group of milk, for ages 4-5 years (75%); and sugary drinks for both groups (100%) presented an adequate intake. As for the group of legumes, the group aged 1-3 years (54%) showed consumption above the levels, according to Table 3. In addition, it was found that, of all children, 10.7% had the habit of eating meals often while watching television, and 53.5% never or rarely did it.

As for the score to assess the overall quality of the diet, average 23.58 points were observed for the group of children aged 1-3 years and 21.25 points for the group of children aged 4-5 years, of a total of 28 points, which indicates, according to the methodology used, that the children, in general, have a healthy diet.

Table 3. Current consumption of the food groups according to the qualitative Food Frequency Questionnaire by children who attended an institutional nursery between 2010 and 2013, Brasília-DF, 2013.

Variable	n 1 – 3 years	n 4 – 5 years	n Total	% Total
Cereals consumption				
Below the recommended level	17	4	21	75
Adequate	2	0	2	7.1
Above the recommended level	5	0	5	17.9
Legume consumption				
Below the recommended level	4	2	6	21.4
Adequate	7	1	8	28.6
Above the recommended level	13	1	14	50.0

Variable	n 1 – 3 years	n 4 – 5 years	n Total	% Total
Consumption of fruits				
Below the recommended level	8	1	9	32.2
Adequate	7	1	8	28.6
Above the recommended level	9	2	11	39.3
Vegetable consumption				
Below the recommended level	16	3	19	67.9
Adequate	5	1	6	21.4
Above the recommended level	3	0	3	10.7
Consumption of meat and eggs				
Below the recommended level	5	2	7	28.6
Adequate	15	2	17	60.7
Above the recommended level	4	0	4	7.1
Consumption of dairy products				
Below the recommended level	15	1	16	57.1
Adequate	7	3	10	35.7
Above the recommended level	2	0	2	7.1
Consumption of sugar, sweets and sugary drinks				
Below the recommended level	10	2	12	42.9
Adequate	7	1	8	28.6
Above the recommended level	7	1	8	28.6

Discussion

The mothers' profile was very homogeneous, with similar characteristics such as age, education, household income and marital status. The mothers' high level of education and family income is a positive factor in relation to food and the children's nutritional status, because the more access to information, the easier the process of education and food and nutritional awareness, as noted in the study by Castro et al.,[17] in which education and family income were shown as factors that may contribute to health improvement, in general.

Regarding the mothers' anthropometric characteristics, it was found that most were classified as eutrophic, while 14.3% were overweight. According to the Household Budget Surveys (HBSs),[18] 48% of women were overweight, unlike the data presented in this research, in which most met the adequate nutritional status. The socioeconomic data identified during the research by Castro et al.[17] may explain, at least partially, the difference between the present results and the ones in HBSs.[18]

As for the type of delivery and number of children, it was found that most mothers had had Caesarean section (C-section) (75%), a number even lower than that found in a study conducted in the Brazilian city of São Luís, in the state of Maranhão, according to which 97.8% of deliveries performed in private hospitals were Caesarean sections.[19] As for the National Monitoring Report of May 2014,[20] it was found that almost 54% of deliveries were Caesarean sections, and the World Health Organization (WHO) recommends[21] that the percentage be between 5 and 15%, in order to reduce the risks caused by indiscriminate cesarean section surgical procedures. Thus, the present study shows higher rates of Caesarean sections than what is recommended by the WHO.[21]

Regarding the number of children, a higher prevalence of one child per woman was found. According to IBGE (Instituto Brasileiro de Geografia e Estatística; Brazilian Institute of Geography and Statistics),[22] the total fertility in Brazil in 2010 reached 1.9 children, below the population replacement level, which would be 2.1 children. This reveals that the average number of children shown in the research is lower than the recommended one for the population replacement. However, most women are still in their fertile period and may have more children later.

Cross-sectional data performed between mothers and children have not generated significant results, which may be due to the sample size analyzed. More studies on these issues, with a larger sample, may be important to analyze possible associations.

As for the children, there was a large number who remained on exclusive breast-feeding until six months of age, and no difference was found among age groups, similar to what was found in the research on Breast-feeding in Brazilian Capital Cities,[5] where 50% of children in the Federal District remained on exclusive breast-feeding up to six months. A different percentage was observed in the study by Brecailo et al.,[4] conducted with 426 children aged between 0 and 23.9 months in low-income families, where 22.4% of the sample remained on exclusive breast-feeding up to four months and only 12.9% up to six months. In the same study, it was found that mothers who worked outside the home would interrupt earlier the exclusive breast-feeding, before the child's sixth month of life. It stands out in that article discussion that the lack of childcare in the mother's workplace and maternity leave of less than six months were determining factors for early weaning.

The study by Simon et al.[23] has also shown that there is greater risk of overweight and obesity in children who have mothers who work outside the home, because these do not supervise what is eaten during the day and sometimes they want to make up for their absence by presenting the child with high energy density foods. Therefore, the six-month maternity leave can promote exclusive breast-feeding due to the child-mother closeness during the whole recommended period.

After six months of age, complementary feeding associated with continued breast-feeding must be started, a standard that should last up to two years of age or more. In this study, it was found that 67.8% of the children had received breast milk up to 12 months of age. This high prevalence can be explained by the nursery existence in the mother's workplace. In the research on Breast-feeding in Brazilian Capital Cities,[5] a similar result was seen, with 65.4% prevalence of breast-feeding until one year of age in the Federal District, but most mothers did not work outside the home.

Importantly, between 12 and 15 months, 50% of the sample were weaned, corresponding to the same period in which the nursery dismissal occurs. Therefore, there may be an association between nursery dismissal and the weaning period. It would be interesting that the nursery started to serve the children up to two years of age in order to encourage the maintenance of breast-feeding. This encouragement is essential because, as the child is going through a phase of adaptation to new foods, textures and flavors, they have not always fully accepted them in the first experiences, and breast milk helps prevent possible nutritional shortcomings and deficiencies.[24]

In relation to receiving instructions about food introduction, it was found that 35.7% of the sample obtained guidance from pediatricians, family and friends, whereas 64.2% from nutritionists. This is a positive fact, since prescribing a diet is exclusively attributed to a nutritionist[25] and this professional's importance is seen in this phase of food introduction, so that there is a correct prescription of how best to start feeding the child.

The children's nutritional status in relation to the weight curve for age and height for age was classified as eutrophic. According to the weight curve for stature, 88.9% were classified as eutrophic and 11.1% with risk of becoming overweight, and in the 4-5 years age group all had normal weight, but in the 1-3 years age group, 86.9% were eutrophic and 13.1% at risk of becoming overweight. According to Sperandio et al.,[26] in a cross-sectional study conducted in eight Brazilian cities with the participation of 350 children of both sexes, 2-5 years old, 66% were in an adequate weight for their age, 83.5% were in an adequate height for their age, 10.8% were low-weight, 63.5% were eutrophic, and 25.8% were at a risk of becoming overweight, according to the weight curve by stature.

The nutritional transition presented this new profile of malnutrition decrease and overweight and obesity increase, as seen in the data presented above. Being overweight predisposes children to several chronic and respiratory diseases, which can cause problems in their development and growth. Therefore, an early diagnosis is essential because the sooner the discovery, the easier the treatment.[27]

In parallel, it was found that 46.4% of children are used to eating their meals while watching television sometimes or almost always and 53.5%, never or rarely. In fact, the media influences the children's food choices, leading them to prefer foods with higher energy density and lower vitamins and minerals concentrations. In a study by Fiates et al.,[28] conducted with 57 students from 7-10 years of age at a private school, it was observed that most of the sample used to watch television during meals (93.1% of girls and 85.7% of boys). In the bibliographic survey, no articles were found that compared children in the same age group in this study. From these data, the possible need can be verified for an intervention so that parents are aware of the high number of children who consume their meals watching television and the harm that this can bring to the formation of their eating habits and nutritional status such as an increased sedentary lifestyle and a predisposition to the development of overweight and obesity.

Dietary intake was analyzed in this study by means of the qualitative Food Frequency Questionnaire validated for 2-5 year-old children. Depending on the memory and the individual collaboration, plus the fact that some foods are not well specified (as in the case of children's soups, which were not classified as industrial or natural), questions may be raised at the time of answering the questionnaire. However, this survey was chosen because it is easy, simple and rapid to implement, has low cost, does not influence or change the eating pattern and provides analysis of the children's habitual consumption.[29,30]

According to the Food Frequency Questionnaire, it was possible to verify the consumption of some food groups above the recommended by the Brazilian Society of Pediatrics,[12] and the intake of others, below.

The high consumption of fruits may result from the fact that the FFQ classified natural fruit juices within the fruits group. However, this classification is not the most adequate, since studies with children have shown that the excessive consumption of fruit juice can lead to an increase in obesity. Sanigorski et al.[31] have conducted a study with 4-12 year-old children and found that those who frequently drank juice (twice a day or more) were more likely to be overweight or obese compared to children who consumed less. Similar conclusions were found in the search by Myles et al.,[32] according to which, in relation to children who were at risk of becoming overweight, increased fruit juice consumption was associated with increased adiposity, while fruit consumption was linked to a decrease. Thus, the importance of classifying fruits and juices in separate groups and not in a single group is verified, as did the Food Frequency Questionnaire used.

Regarding the consumption of legumes, there is research that indicates an adequate intake or below the recommendation, such as the one by Barbosa et al.,[33] in opposition to the results of this study, in which most of the consumption was above the recommended (probably because of eating lunch and dinner being instructed by the site nutritionists). Thus, it is possible to see the need for more studies to verify if the recommendation of one serving per day is sufficient to meet the child's needs during this life period, as the inappropriate consumption can contribute to the development of nutritional deficiencies such as iron deficiency ferro.[34]

As for meat consumption, it was adequate for most children, unlike that found in the study by Bortolini et al.,[9] which showed that 38.2% of children aged 6-59 months consumed meat, chicken or fish every day, an intake below the one in the present study. This food group is important and its intake needs to be encouraged, because it has good availability of heme iron and other important nutrients for growth and development.

Cereals consumption proved to be lower than recommended, which might stem from the fact that the FFQ included in this group sandwich cookies, potato chips and instant noodles, for example, food that many mothers reported not offering to their children. In the research by Barbosa et al.,[33] consumption below recommended levels was also found, but much of the consumption of this group came from snacks and sandwich cookies.

Milk intake was also lower than recommended. However, in the questionnaire given to the mothers, there was no question addressing the existence of an intolerance or allergy, and this may be one of the factors for the results found on this food group intake. In addition, the questionnaire

did not address the consumption of breast milk as milk supply. In the research by S. Filha et al.,[34] consumption below the recommendations was also verified. Attention should be paid to these foods consumption, because they are rich sources of calcium, an important mineral for bone health that contributes to bones formation, mineralization and rigidity.[35]

The low consumption of vegetables was observed in 67.9% of children, while 32.1% had an adequate or above recommended consumption. In the study by Alves et al.,[36] and Bortolini et al.,[9] low consumption of vegetables as also seen. Because they are foods rich in fiber, vitamins and minerals, intake of this group should be encouraged. In the specific case of the children, it is interesting to use creativity to innovate, offer new recipes and invest time in the presentation of the dishes, as behaviors such as these will draw the child's attention and can encourage them to increase the consumption of these foods.

The consumption of sugars and sugary drinks was represented 42.9% below the recommended. A study in the Brazilian city of Aracaju with 6-35 month children showed a different result. In that case, most children had an excessive consumption of sugars and sweets.[34] Many articles show the relationship between excessive consumption of sweets and sugars with overweight, obesity and other chronic diseases – therefore, the intake of this food group should be avoided and their offer to children should occur later.[23]

As for the snacks and preparations (pizza, hamburger, etc.) group, it was found that 42.9% of children consumed such foods at least once a day. However, these foods intake should not be encouraged, as they are related to increased risk of overweight and obesity. Therefore, the ideal would be an occasional consumption, not a daily one.

Thus, despite the variation in intake of certain food groups, it was found that the overall average score for assessment of a healthy diet was high: 23.50 points to the group of 1-3 years and 21.25 points to the group of 4-5 years, of a total of 28 points. In the study by Coelho et al.,[37] that used the same methodology, but a distinct Food Frequency Questionnaire, the mean score for 6-9 year children was 16.00 ± 6.83 points, of a total of 50 points. That is, it is possible to see that the children's means in this study proved to be high, which might suggest a positive influence of the nursery on their food.

Conclusion

It was concluded that more than two thirds of the sample remained on exclusive breast-feeding until six months of age, and half of the children were weaned between the age of one year and one year and three months, the same period in which nursery dismissal takes place.

As for the children's food intake, there was a deficit in the intake of vegetables, foods rich in nutrients and fiber, which are important for their healthy development. The average consumption of foods with high energy density was found in almost 43% of the sample, which should not be encouraged because they provide an excessive intake of calories at the expense of minerals, which is harmful to the health and proper growth. Legume consumption was found to be high for 50% of the sample, and fruits for 40%. These results prove to be positive, because they are nutrient-rich foods and contribute to the child's proper development.

The importance of new studies using food population-based consumption surveys should be emphasized, which boost the children's nutritional monitoring and use a methodology adjusted to this interpretation model.

Anyway, it is expected that these results give subsidies for an assessment of the long-term effects of the work done in nurseries, such as encouraging breast-feeding, creating good eating habits and the prevention of overweight, in order to better meet the needs of the population under five years of age.

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Received: December 17, 2014
Revised: January 06, 2015
Accepted: January 14, 2015