FOOD AND NUTRITION IN COLLECTIVE HEALTH

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Assessment of food consumption of children between 6 and 24 months attending primary health care basic unit in Macaé, Rio de Janeiro

Avaliação do consumo alimentar de crianças entre 6 e 24 meses usuárias de uma unidade básica da atenção primária à saúde de Macaé, Rio de Janeiro

Abstract

The study aims to describe prevalences of food consumption in children aged 6-24 months assisted by a primary healthcare unit (PHU). A primary-based descriptive study was conducted with children between 6-24 months of age, enrolled at a PHU in the municipality of Macaé-RJ, between October, 2016 and February, 2017. The "Food Consumption Markers" form proposed by the Coordenação-Geral de Alimentação e Nutrição (CGAN) (General Coordination Office for Food and Nutrition) in contribution to the Sistema de Vigilância Alimentar e Nutricional (Sisvan) (National System for Food and Nutritional Surveillance) was used in the study. Prevalence of 80% and over was adopted, as recommended by the Ministério da Saúde (Ministry of Health) for healthy food indicators. Data from 33 children were analyzed, corresponding to 78.6% of the total number of children assisted by the PHU for the assessed age groups. In the analysis of food indicators, it was observed that the children aged between 6-12 months did not meet the 80% target for consumption of fruits, vegetables, greens, meats or egg. On the other hand, children aged 12-24 months exhibited prevalences above the target for consumption of fruits, meats or egg. Half of the children aged 6-12 months consumed salty food once; most of the children over 12 months consumed salty foods twice. For both age groups, there was a higher intake of solid foods in pieces, with statistical significance only for children older than 12 months. It is concluded that the children aged 12-24 months met the Ministry of Health target for consumption of fruits, meats or egg.

Keywords: Child health. Infant. Food consumption.

Resumo

O estudo visa descrever a prevalência do consumo alimentar de crianças entre 6-24 meses usuárias de uma unidade básica de saúde (UBS). Realizou-se estudo descritivo de base primária, com crianças entre 6-24 meses, usuárias de uma UBS do município de Macaé-RJ, entre outubro de 2016 e fevereiro de 2017. Foi utilizado o formulário "Marcadores de Consumo Alimentar", proposto pela Coordenação-Geral de Alimentação e Nutrição (CGAN), em contribuição ao Sistema de Vigilância Alimentar e Nutricional (Sisvan). Utilizou-se a prevalência igual ou superior a 80,0%, recomendada pelo Ministério da Saúde para os indicadores de alimentação saudável. Foram analisados dados de 33 crianças, correspondendo a 78,6% do total das crianças

usuárias da UBS, na faixa etária avaliada. Ao analisar os indicadores alimentares, observou-se que as crianças entre 6-12 meses não atingiram a meta de 80,0% para o consumo de frutas, legumes, verduras de folha, carnes ou ovo. Em contrapartida, as crianças entre 12-24 meses apresentaram prevalências acima da meta para o consumo de frutas e carnes ou ovo. A metade das crianças entre 6-12 meses consumiu uma vez comida de sal; e a maioria das crianças acima de 12 meses a consumiu duas vezes. Em ambas faixas etárias, houve maior consumo de alimentos em pedaços, com significância estatística apenas para aquelas acima de 12 meses. Conclui-se que as crianças entre 12-24 meses atingiram a meta do Ministério da Saúde para o consumo de frutas e carnes ou ovo.

Palavras-chave: Saúde da criança. Lactente. Consumo de alimentos.

INTRODUCTION

Early childhood, from birth to six years old, is the time when intense health care should be provided, mainly in the field of Food and Nutrition, due to the close relationship between food consumption, body mass and morbidities, which can determine both underweight or overweight (or obesity) at different phases of life.[1]

Worldwide, overweight hits approximately 41 million of children under the age of five.[2,3] However, at the national level, there are few recent studies on the prevalence of overweight in Brazilian children under five years of age. According to Pozza, Nucci and Enes,[4] children aged 3 to 4 years with obesity are 15 to 25% more likely to become obese adults.

Increase in childhood overweight has been associated with an inadequate introduction of foods during the lactation period, e.g., sugary foods, processed foods, foods rich in sodium and with high glycemic index,[5] which leads to the onset of noncommunicable diseases (NCD) and affects the quality of life, especially in adulthood.[6]

The *Ministério da Saúde* (Ministry of Health) recommends the practice of exclusive breastfeeding (EBF) until six months of life, complemented until two years or over,[7] with introduction of supplementary foods only after six months of age, because it has a protective effect against the emergence of obesity. At the end of the first year of life, the child can eat food similar to that of the family, at regular mealtimes.[8]

However, in Brazil, the *II Pesquisa de Prevalência de Aleitamento Materno nas Capitais Brasileiras e Distrito Federal* (2nd Survey on the Prevalence of Breastfeeding in Brazilian Capitals and in the Federal District), between 1999 and 2008, revealed that 26.8% of children between 6-9 months did not consume salty food. In the same age group, 69.8% of children had occasionally eaten fruits, and 70.9% of them, vegetables. With respect to unhealthy food markers, it was found a high consumption of coffee (8.7%), soda (11.6%) and especially cookies and/or candies (71.7%) between children aged 9-12 months.[9] This data indicates consumption of non-recommended foods at very early ages.

Given this scenario, in Brazil, 2010, the *Estratégia Nacional para Alimentação Complementar Saudável (ENPACS)*[10] (National Strategy for Healthy Complementary Foods) was implemented and, in 2012, incorporated to the *Estratégia Amamenta e Alimenta* (Breastfeeds and Feeds Strategy) having as one of the main goals to encourage healthy eating in children under two years in the daily practice of healthcare services, aiming to build healthy eating habits since birth, with introduction of complementary foods in an appropriate and timely manner, respecting the cultural and food identity.[11,12]

Given the importance of this topic in the field of Nutritional Epidemiology, the lack of works published in the field of infant nutrition in the city of Macaé and the partnership created by the university and the *Secretaria Municipal de Saúde* (Municipal Health Department), which enabled access to the healthcare services at its different complexity levels, the present study aimed to describe prevalences of food consumption in children aged between 6-24 months, assisted by a primary family healthcare unit (PHU) and make a comparison between such prevalences according to age groups.

METHODS

An observational, descriptive, prospective, primary study was conducted at a PHU located in Botafogo neighborhood, between October 2016 and February 2017. The population of this neighborhood has an economically low income and is located in the municipality of Macaé, RJ. With a Human Development Index

(HDI) of 0.764 (the seventh highest HDI in the state of Rio de Janeiro), the city has a total area of 1,216.846 square kilometers, corresponding to 12.5% of the Northern Region of Rio de Janeiro.[13]

Macaé is economically driven by the oil industry, particularly oil extraction, which has contributed to the establishment of many small, medium and large companies. Such exponential expansion led to the city's population growth, which increased significantly in a short period of time.[13]

As eligibility criteria, the study included all children aged between six months and 23 months and 29 days, living in Macaé and registered at the PHU, and as non-eligible infants with congenital malformation impairing breastfeeding (e.g., cleft lip, cleft palate).

To evaluate food consumption, the tool used was the "Food Consumption Markers" form proposed by the *Coordenação- Geral de Alimentação e Nutrição (CGAN)* (General Coordination Office for Food and Nutrition) in contribution to the *Sistema de Vigilância Alimentar e Nutricional (Sisvan)*[14] (National System for Food and Nutritional Surveillance). This tool is designed to recognize healthy and unhealthy foods or behaviors. The section that is specifically designed for 6 to 23-month children enables to identify intake of healthy and unhealthy foods (food consumption markers – healthy foods: fruits, vegetables, greens, meats and offal, beans and other legumes, cereals and tubers; unhealthy foods: sausages, processed juices, sodas, instant noodles and others, cookies, biscuits, processed snacks and stuffed cookies, sweets, candies or others). It also enables to characterize the introduction of quality foods on a timely manner and identify risk or protection markers for micronutrient deficiency and overweight.

The second instrument was the questionnaire developed and previously tested for the study, containing: demographic data such as gender, child age (6-12 incomplete months; 12-24 incomplete months); mother's age (<19; 20-29 incomplete years; >30 years); with a partner or not (no and yes); number of children: 1; 2; >3). Socioeconomic data: household income (in minimum wages: <1 and 1 to 2, because income was lower than two minimum wages in the studied group); mother's educational level (in number of school years: <9; >9); mother's work (with a job: yes and no). Eating habits: frequency of intake (number of times that pureed fruits and cooked foods were offered on the day before the interview).

For data collection, initially, four interviewers previously trained examined the medical records of resident children and users of the PHU services, in a total of 42 children. During five months, with assistance of the community health agents, each interviewer made home visits at least once a week. There were no refusals. When the interviewer did not reach the child's mother or caregiver at home, he returned twice in alternate weeks to get the interview.

Initially, a descriptive analysis of the variables studied was conducted by means of absolute and relative frequency distributions, mean values and standard deviation [mean (±SD)] and amplitude. To verify the significance of the differences found in the responses by groups and categories, the Chi-square statistic was used. The measure of the association used was the prevalence ratio calculated by the Poisson regression model. The level of statistical significance used in all analyses was 5%. The statistical software SPSS version 20.0® and STATA version 12.1® were used.

In this study, the indicators of healthy diet[10] were calculated by using for each indicator a marker of healthy food: leafy greens, vegetables, fruits, meats and egg, in the numerator; and in the denominator the age between 6-23 months and 29 days.[10] However, the numerator was categorized in two age groups (6-12 months; 12-24 months), to broaden the scope of analysis. The indicators are the following:

Indicator 1: percentage of children between 6 to 12 months who had eaten leafy greens the day before the interview.

Indicator 2: percentage of children between 12 to 24 months who had eaten leafy greens the day before the interview.

Indicator 3: percentage of children between 6 to 12 months who had eaten vegetables the day before the interview.

Indicator 4: percentage of children between 12 to 24 months who had eaten vegetables the day before the interview.

Indicator 5: percentage of children between 6 to 12 months who had eaten fruits the day before the interview.

Indicator 6: percentage of children between 12 to 24 months who had eaten fruits the day before the interview.

Indicator 7: percentage of children between 6 to 12 months who had eaten meat or egg the day before the interview.

Indicator 8: percentage of children between 12 to 24 months who had eaten meat or egg the day before the interview.

The Ministry of Health set the target that prevalences of 80% and over should be observed by the healthy eating indicators (greens, vegetables, fruits and meats) the day before the interview,[10] in children under 24 months of age. In this study, the prevalence defined by the Ministry of Health was used.

This research was approved by the Research Ethics Committee of the School of Medicine of Campos dos Goytacazes, CAAE process n° 30378514.1.0000.5244.

RESULTS

Data from 33 children aged between 6-24 months, corresponding to 78.6% of the total number of children in this age group, registered at the Botafogo PHU in the period of assessment, was analyzed.

Of the children between 6-12 months, 75.0% were female, and of those aged between 12-24 months, 58.8% were male. About the mothers, 57.5% of them were 20-29 years old; 52.0% lived with a partner; 78.8% had nine years or less of study; 73.0% did not have a job or worked outside the home; 39.4% had one child, 33.3% had two children and 27.3% had more than three children. Concerning household income, 42.5% earned less than one minimum wage and 57.5% earned 1-2 minimum wages. Except for age between 12-24 months, marital status and income, the other variables indicated statistically significant *p*-values (Table 1).

Table 1. Socioeconomic and demographic characteristics of children aged between 6-24 months and their mothers, enrolled at the Family Health Strategy of the Botafogo healthcare unit, municipality of Macaé. October 2016 to February 2017. (n=33)

Characteristics	N	%	p-value[1]
Age (months)			
6-12			
Female	12	75.0	0.046
Male	4	25.0	
12-24			

Table 1. Socioeconomic and demographic characteristics of children aged between 6-24 months and their mothers, enrolled at the Family Health Strategy of the Botafogo healthcare unit, municipality of Macaé. October 2016 to February 2017. (n=33). (Continues)

Characteristics	N	%	p-value[1]
Female	7	41.1	0.467
Male	10	58.8	
Mother's age (years)			
< 19	9	27.3	0.009
20–29	19	57.5	
> 30	5	15.2	
Partner			
Yes	17	52.0	0.862
No	16	48.0	
Mother's schooling (years)			
< 9	26	78.8	0.001
> 9	7	21.2	
Job			
Yes	9	27.0	0.009
No	24	73.0	
No. of children			
1 child	13	39.4	0.018
2 children	11	33.3	
>3 children	9	27.3	
Household income			
<1 minimum wage	14	42.5	0.459
1 to 2 minimum wages	19	57.5	

[1]Non-parametric Chi-square statistic.

With respect to the food consumption of the children between 6-12 months (Table 2), it was found a consumption of 44.0% of breastmilk, 87.0% of salty food (cooked food, mashed food or soup), 69.0% of milk other than breast milk, 25.0% of porridge with milk, 50.0% of yogurt, 56.0% of orange-colored vegetable or fruit, 81.0% of beans, and 81.0% of cereals and tuberous roots. No child ate hamburger and/or sausages the day before the interview, and 6.0% ate liver; 56.0% of the children consumed sugary beverages, 19.0% ate instant noodle and others, and 31.0% consumed packaged stuffed cookies, sweets or candies. Statistically significant differences were found for consumption of salty foods (p-value=0.004), beans (p=0.021), cereals and tubers (p=0.021), leafy greens (p<0.001), liver (p=0.001), hamburger and/or sausages (p<0.001) and instant noodle and others (p=0.021).

In the analysis of the healthy eating indicators, it was found that 69.0% of the children aged 6-12 months consumed fruits, 50.0% vegetables, 6.0% leafy greens, 44.0% meats or egg, with statistically significant *p*-values (Table 2).

In the age group of 12-24 months, prevalences of consumption of food markers in the previous day were: 82.0% breast milk, 94.0% salty food, 71.0% milk other than breast milk, 24.0% porridge with milk, 41.0% yogurt, 47.0% of orange-colored vegetables or fruits, 88.0% beans, 94.0% cereals and tubers, 29.0% hamburger and/or sausages, 71.0% sugary beverages, 65.0% instant noodle and others; 47% stuffed cookies, sweets or candies. No child consumed liver. Statistically significant differences were found for consumption of breast milk

(p=0.013), salty food (p<0.001), beans (p=0.002), cereals and tubers (p<0.001), and for non-consumption of porridge with milk (p=0.049) and liver (p<0.001), as shown in Table 2.

In the analysis of the healthy eating indicators, prevalence of 82.0% (n=14) was found for fruits intake, 36.0% for vegetables, 12.0% for leafy greens, 82.0% for meats or egg. Except for vegetables, statistically significant differences were found for consumption of fruit (p=0.013), meat or egg (p=0.013) and greens (p=0.002), as can be seen in Table 2.

Table 2. Prevalence of consumption of food markers in the previous day according to the children's age group (months), enrolled at the Family Health Strategy of Botafogo unit, municipality of Macaé. October 2016 to February 2017. (n=33)

	6-12 (n=16)			12-24 (n=17)		
	Yes	No	p-value[1]	Yes	No	p-value[1]
Food markers	%(n)	%(n)		%(n)	%(n)	
Breast milk	44.0(7)	56.0(9)	0.804	82.0(14)	18.0(3)	0.013
Fruit	69.0(11)	31.0(5)	0.21	82.0(14)	18.0(3)	0.013
Salty food	87.0(14)	13.0(2)	0.004	94.0(16)	6.0(1)	<0.001
Other kind of milk than breast milk	69.0(11)	31.0(5)	0.21	71.0(12)	29.0(5)	0.143
Porridge with milk	25.0(4)	75.0(12)	0.077	24.0(4)	76.0(13)	0.049
Yogurt	50.0(8)	50.0(8)	1	41.0(7)	59.0(10)	0.629
Vegetables	50.0(8)	50.0(8)	1	36.0(6)	65.0(11)	0.332
Orange-colored vegetable or fruit	56.0(9)	44.0(7)	0.804	47.0(8)	53.0(9)	1
Leafy green	6.0(1)	94.0(15)	0.001	12.0(2)	88.0(15)	0.002
Meat or egg	44.0(7)	56.0(9)	0.804	82.0(14)	18.0(3)	0.013
Liver	6.0(1)	94.0(15)	0.001	0.0(0)	100.0(17)	<0.001
Beans	81.0(13)	19.0(3)	0.021	88.0(15)	12.0(2)	0.002
Cereals and tubers [2]	81.0(13)	19.0(3)	0.021	94.0(16)	6.0(1)	<0.001
Hamburger and/or sausages	0.0(0)	100.0(16)	<0.001	29.0(5)	71.0(12)	0.143
Sugary drinks [3]	56.0(9)	44.0(7)	0.805	71.0(12)	29.0(5)	0.143
Instant noodle and others [4]	19.0(3)	81.0(13)	0.021	65.0(11)	35.0(6)	0.332
Stuffed cookies, sweets and candies	31.0(5)	69.0(11)	0.21	47.0(8)	53.0(9)	1

[1]Non-parametric Chi-square statistic.

[2]Rice, potato, yam, cassava, flour or pasta (not instant).

[3]Soda, packaged juice, powder juice, packaged coconut water, guarana/currant syrups, fruit juices with sugar addition.

[4] Instant noodle and others (packaged candies or salty crackers).

The children aged 6-12 months had a higher consumption of porridge with milk, yogurt, vegetables, orange-colored vegetable or fruit on the previous day, and statistically significant differences were found (Table 3). On the other hand, the children aged between 12-24 months consumed more breast milk, fruits, salty food, milk other than breast milk, leafy green, bean, carbohydrate, sweetened drinks, instant noodle and others, and stuffed cookies, sweets or candies. A *p*-value with borderline statistical significance was found for instant noodle (p=0.057), as shown in Table 3.

Table 3. Prevalence ratio of food markers between the age groups, between 12-24 months/6-12 months, of children enrolled at the Family Health Strategy in Botafogo neighborhood, municipality of Macaé. October 2016 to February 2017. (n=33)

Food markers	Prevalence ratio (CI95%)	p-value[1]
Breast milk	1.88 (0.75-4.66)	0.172
Fruit	1.20 (0.54-264)	0.654
Salty food	1.07 (0.52-2.20)	0.842
Food (consistency)	0.83 (0.44-1.55)	0.564
Milk other than breast milk	1.02 (0.45-2.32)	0.950
Porridge with milk	0.94 (0.23-3.76)	0.932
Yogurt	0.82 (0.29-2.27)	0.708
Vegetables	0.70 (0.24-2.03)	0.519
Orange-colored vegetable or fruit	0.84 (0.32-2.17)	0.713
Leafy green	1.88 (0.17-20.75)	0.606
Meat or egg	1.88 (0.75-4.66)	0.172
Liver	--[2]	--[2]
Bean	1.08 (0.51-2.28)	0.828
Cereal and tuber [4]	1.15 (0.55-2.40)	0.694
Hamburger and/or sausages	--[2]	--[2]
Sugary beverages[5]	1.25 (0.52-2.97)	0.607
Instant noodle and others[6]	3.45 (0.96-12.36)	0.057[3]
Stuffed cookies, sweets or candies	1.50 (0.49-4.60)	0.473

[1]Poisson logistic regression.
[2]It was not possible to capture interaction because no child consumed the food on the previous day.
[3]borderline p-value.
[4]Rice, potato, yam, cassava, flour or noodle (not instant).
[5]Soft drink, packaged juice, powder juice, packaged coconut water, guarana/currant syrups, fruit juice with addition of sugar.
[6]Instant noodle and others (packaged snacks or salty crackers).

In the group between 6-12 months, 54.5% of the children ate one portion of pureed fruit the day before interview. Between 12-24 months, 50% of the children studied ate this food three times in the previous day, and no statistically significant values were found for the number of times that pureed fruit was offered to the children of both groups (Table 4).

In the analysis of the proportion of the number of salty food serves offered to the children between 6-12 months, 50.0% of the children ate one serve of salty food in the previous day. In the group between 12-24 months, 87.5% of the children ate salty food twice on the previous day. A statistically significant *p*-value was found for consumption of salty food twice on the day before the interview (p-value<0.001), as can be seen in Table 4.

Table 4. Percent distribution of consumption frequency in which fruit puree and cooked food were offered on the previous day according to the age group (months) of children enrolled in the Family Heath Strategy in the Botafogo neighborhood unit, municipality of Macaé. October 2016 to February 2017. (n=33)

Consumption frequency	6-12		12-24	
	%(n)	p-value[1]	%(n)	p-value[1]
Fruit puree				
Once	54.5(6)	0.307	21.4(3)	0.395
Twice	27.3(3)		28.6(4)	
Three times	18.2(2)		50.0(7)	
Cooked food				
Once	50(7)	0.109	6.2(1)	0.000
Twice	42.9(6)		87.5(14)	
Three times	7.1(1)		6.2(1)	

[1]Non-parametric Chi-square statistic.

DISCUSSION

In the present study, the mean age of the mothers was 23.3 years, more than half of them had a partner, about 2/3 had more than two children, and concerning education, more than 3/4 had less than nine years of study. It was found that only 1/4 of the mothers had a job and more than half reported a household income of 1-2 minimum wages. More than half of the children aged between 6-12 months consumed salty food, other milk than breast milk, yogurt, orange-colored vegetable or fruit, bean, sweetened drinks, instant noodle and others, stuffed cookie, sweets and candies. In the group age of 12-24 months, prevalence of consumption of food markers on the previous day was high for breast milk, salty food, milk other than breast milk, bean, cereals and tubers, sugary drinks, instant noodle and others.

When analyzing the food indicators (greens/vegetables, fruit and meat) adapted from those proposed by the Ministry of Health,[10] it was found that the children aged between 6-12 months did not reach the 80% target for consumption of fruits, vegetables, leafy green, meat or egg. On the other hand, children between 12-24 months had prevalences above the targeted intake of fruits and meats or eggs.[10] Half of the children between 6-12 months of age consumed one serve of salty food in the previous day, and most of the children aged over 12 months consumed it twice.

Early introduction of solid foods before six months of age has been found in the literature, indicating the difficulty for infants to be breast-fed exclusively until six months of age, as recommended by the Ministry of Health, as well as with respect to healthy, appropriate and timely introduction of solid foods after six months.

Data from the United Nations Children's Fund,[15] in 2014, showed that in Brazil 68% of children begin to be breast-fed in the first days of life, 41% of them remain on EBF until six months and 25% remain in BF until the age of two. The present study indicated that the intake of breast milk by children aged 12-24 months was higher than 80%; less than half (44%) of the children between 6-12 months of age were breast fed on the day before the interview.

A study conducted by Marinho et al.,[16] which investigated the situation of supplementary foods provided to 218 children between 6-24 months of age, assisted at the PHU of Macaé, RJ, with data obtained from Sisvan

WEB in 2013, found a consumption of 72.3% of greens/vegetables, 75.3% of fruits, 63.4% of meats, 23.8% of foods rich in sugar (honey, cane syrup, plain sugar and *rapadura* [solid brown sugar]), 34.7% of industrial juice and 17.8% of soft drinks for infants aged between 6-12 months. Consumption of industrial juice was significantly higher in boys (p-value<0.001).

The abovementioned authors[16] found that 77.6% of the children aged between 12-18 months consumed greens/vegetables, 77.4% fruits and 86.3% meats. The intake of foods rich in sugar was 31.0%; processed juice was 56.8%, and 50% soft drinks. Between 18-24 months of age, the authors found that 89.9% of the children consumed greens/vegetables, 83.1% fruits and 96.7% meats. The intake of sugar-rich foods was 33.9%, 69.5% was the consumption of industrial juice and 55.5% soft drinks. The authors concluded that the healthy supplementary food indicators were close to the target established by the Ministry of Health (80%), differently from those found in this study.

In this study, it can be observed that the food consumption of users of a specific health care unit in Macaé differed from that found by Marinho et al.,[16] who investigated data of all individuals aged 6-24 months enrolled at the Family Health Strategy (FHS). In this regard, at a macro level, the children aged 6-24 months assisted by the FHS exhibited a dietary intake very close to the healthy target, which was not observed at the micro level. Thus, it is important to know and consider the specificities of each location, and not only the macro-level reality, given that each location may have different realities and, therefore, actions and strategies must be developed according to their particularities.

Marinho et al.[16] also observed that as age increases, intake of both healthy and unhealthy foods also increases. Likewise, the present study corroborates the findings of said authors, considering the increased consumption of unhealthy foods, e.g., instant noodles and others, the most prominent food consumption marker.

The presence of foods that can be considered unhealthy eating markers indicates an inadequate introduction of complementary foods, which may be conducive to an adverse impact on the child's growth and development and an increased susceptibility to diseases.[8] In this context, the term "sentinel food" is suggested, as a flag to signal the introduction of unhealthy foods, following the definition proposed by Rutstein et al.[17] for sentinel health events, which is the recognition of a preventable disease, disability or unexpected death, whose occurrence serves as a warning signal that the quality of the therapy or prevention must be reviewed. Thus, when such an event is detected, it is necessary to report it to the epidemiologic surveillance system so that appropriate actions can be defined.[18]

In the case of the sentinel food, the food and nutrition surveillance system, based on the reports submitted by e-SUS AB or Sisvan WEB, would signal the need to develop actions and strategies that would impact positively on the dietary practice of a population at a certain location or user of a healthcare unit.

Inappropriate feeding of children under the age of two years has been observed in studies conducted in diverse cities and regions in the country, even with the actions of promotion of healthy eating practices for children of this age by the Ministry of Health.[19]

The study carried out by Silva et al.[20] with 1,176 children during the National Vaccination Campaign in São Bernardo do Campo-SP in 2003 investigated the prevalence of consumption of complementary foods and the factors associated with a timely complementary feeding of children under one year. The authors found an estimated prevalence of 64.0% of complementary feeding at 8 months of age, of 78.0% for fruit and mashed/pureed vegetables, and 48.0% for cooked foods (rice, beans and meat).

Parada et al.,[21] analyzed the complementary feeding practices at the first year of life of 1,238 children in the 1st Phase of the National Multi-vaccination Campaign in Botucatu-SP, 2004, and observed that the introduction of supplementary foods was too early. The authors identified children under four months consuming teas (30.7%); between 4-6 months consuming fruits (54.1%), soups (39.9%) and solid foods (19.2%). These authors also observed consumption of foods with inadequate consistency for the age; children between 6-8 months fed the same foods eaten by the family (48.8%) and children above eight months eating soups (71.6%). These data were similar to the ones found in the present study for fruits and juice consumption; in turn, the consumption of solid foods was higher (87.0%) than that found by Parada et al.;[20] the consumption of solid foods in pieces in this study was higher for both age groups.

Palmeira et al.,[22] in a sectional study carried out in 14 municipalities economically poor in the state of Paraíba, analyzed the feeding practices of children under two years of age from May to August, 2005. The authors found a consumption of fruits and meats of about 50.0% and 45.0%, respectively, for children aged 12-24 months.

Garcia et al.,[23] in a cross-sectional study in the urban area of Acrelândia-AC, investigated the complementary dietary practices and the nutritional status of 164 children under 24 months of age, from December, 2007 to March, 2008. The authors found that 51.8% of the children ate at least one fruit per day; 46.6% consumed at least one serve of vegetable; 89.9% of the children consumed at least one serve of meat, egg or beans; and 4.2% and 10.2% of soft drinks and sweets, respectively.

The study of Alves et al.,[24] conducted with children aged 12-24 months in the area covered by a primary healthcare unit in Belo Horizonte-MG, from February to April, 2009, identified a daily intake of fruits (38.1%), vegetables (69.5%), meats (55.9%) and sugars and sweets (67.8%).

The study conducted by Flores et al.[25] analyzed data from the National Health Survey in 2013 and found a high prevalence of consumption of unhealthy foods (sodas, industrial juices, sweets and cookies) in all age groups.

The study of Lopes et al.,[26] which aimed to assess the frequency of breastfeeding and introduction of supplementary foods in children under two years of age, found that already in the third month of life, 56.8% of them received water; 15.5% natural juice/infant formulation; and 10.6% cow milk. The authors also found a consumption of artificial juice by 31.1% of children aged 12 months. With respect to solid and semi-solid foods, the authors found that half of children aged six months were already fed grains, vegetables, bean and meat. But fruits (45.0%) were consumed by infants aged five months. Before completing one year of life, instant noodle was already consumed by 25% of the children, and nearly 50.0% of them had already consumed sweets (lollipops candies and caramels), as well as sugar and chocolate milk by 30.0% of them.

In the first decade of the 21st century, it was possible to find a high prevalence of contraindicated foods, especially in the child's two first years of life. According to the Ministry of Health,[7] complementary foods should be introduced gradually every day and should include healthy foods such as fruits, vegetables, meats or eggs and beans, avoiding unhealthy items such as sodas, processed juices, sugar, among others. However, in the studies cited above, the introduction of complementary foods falls far short of that recommended by the "Dietary Gide for Children under Two Years of Age", which contains "Ten steps for a healthy diet of children under two years".[27]

All health professionals of the Primary Healthcare Service are responsible for every child's healthy eating, not only dietitians/nutritionists, and should use, as a strategy in food and nutrition health education, the "Ten Steps". They provide feeding guidance for children from birth to two years of age, recommending the addition of foods in a gradual and timely manner. This Guide represented an important leap toward the support and

guidance on clinical and educational practices for healthcare providers, based on a set of recommendations for healthy supplementary diets for children under two years of age.[26] Several studies point to the relationship between inadequate food intake and child obesity which may pose adverse effects on adult life. Given the current scenario, there is still a need for more investments in the field of food and nutrition for children.[1,28-30]

Flores et al.[25] point to an early intake of foods rich in sugar and sodium and late intake of vegetables and fruits, which are associated with conditions such as the increased number of mothers working outside the home and lack of time to prepare meals, which contribute to dietary inadequacy, with damages to the child's health. In this regard it is still a huge challenge for health professionals, particularly in the Primary Healthcare Service, to change the dietary habits of this population, being necessary more effective public policies for food and nutrition in the first two years of life.

The present study has some limitations, such as the memory bias of the interviewees when responding questions on food consumption, which may have been minimized because the questionnaire contained questions about the foods consumed the day before the interview. The study is representative of the population studied, since it represents 80% of it. However, the results cannot be generalized for populations with other characteristics, because they are representative of a specific location.

CONCLUSION

In this study, it was observed that older children met the target of the Ministry of Health for fruits, meats or egg intake. Considering food markers, both groups of children aged between 6-12 months and 12-24 months consumed salty solid food, milk other than breast milk, sweetened drinks, instant noodle, industrial stuffed cookies, sweets and candies. Consumption of pieces of solid foods was found in both age groups.

It should be highlighted the inadequate intake of foods by children aged between 6-24 months, which was high, and this is a determining factor for the onset of morbidities in childhood and other life stages, among them micronutrient deficiencies, tooth decay, overweight and obesity – the latter considered today a worldwide epidemic.

Finally, this study provides important data on the feeding habits of a highly-vulnerable population group in terms of nutrition risks, of a specific location in the municipality of Macaé-RJ. Thus, it is expected that the information provided may contribute to the understanding, discussion, reflection and development of actions and strategies in the scope of public policies and city programs aimed at the healthy introduction of complementary foods.

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Contributors

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