

Feeding and nutritional profiles of children at 12 months of age living in the western region of the city of *São Paulo*: The Procriar Project

Perfil alimentar e nutricional de crianças no final do primeiro ano de vida residentes na região Oeste do município de São Paulo: Projeto ProcriAr

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ABSTRACT

Objective

To analyze the feeding profiles, nutritional statuses and influences of maternal characteristics on food consumption of infants at the end of the first year of life.

Methods

This is a cross-sectional study nested within a cohort of pregnant women that evaluated children with a mean age of 12.1 months. The weights and lengths were measured, and the body mass index was calculated. Food consumption was obtained through 24-hour recall and was assessed qualitatively. The outcomes studied dichotomously (yes/no) were overweight (body mass index $\geq +2$ Z-scores), consumption of foods considered unhealthy (*i.e.*, sugar, *petit suisse* cheese, sandwich crackers, and soft drinks), consumption of fruits, legumes

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and vegetables and a minimum acceptable diet composed of minimum dietary diversity and minimum meal frequency. Logistic regression models were constructed to evaluate the association between maternal variables and the outcomes studied.

Results

A total of 254 infants were evaluated, of whom 10.7% were overweight. The majority of the infants did not receive a minimum acceptable diet (58.7%), 28.0% consumed *petit suisse* cheese and 42.0% received added sugar in their preparations. Mothers less than 20 years old or with more schooling were more likely to offer unhealthy foods to their children ($p=0.03$). Fruits, legumes and vegetables (consumption was higher among children of mothers over 20 years old ($p=0.04$)).

Conclusion

The study revealed a high prevalence of overweight and an inadequacy of food consumption among children. The finding that adolescent mothers and/or mothers with more schooling tend to offer inadequate food to children may favor the definition of specific educational strategies.

Keywords: Infant nutrition. Overweight. Supplementary feeding.

RESUMO

Objetivo

Analisar o perfil alimentar, o estado nutricional e a influência das características maternas sobre o consumo alimentar de lactentes ao final do primeiro ano de vida.

Métodos

Trata-se de um estudo transversal aninhado a uma coorte de gestantes que avaliou crianças com idade média de 12,1 meses. Foram aferidos o peso e comprimento e calculado o índice de massa corporal. O consumo alimentar foi obtido através de recordatório de 24 horas, avaliado de forma qualitativa. Os desfechos estudados dicotomicamente (sim/não) foram: sobrepeso (índice de massa corporal $\geq +2$ score-Z), consumo de alimentos considerados não saudáveis (açúcar, queijo *petit suisse*, bolacha recheada, refrigerantes entre outros), consumo de frutas, legumes e verduras e dieta mínima aceitável composta pela diversidade mínima da dieta e frequência mínima de refeições. Foram construídos modelos de regressão logística para avaliar a associação entre variáveis maternas e os desfechos estudados.

Resultados

Foram avaliados 254 lactentes sendo 10,7% classificados com excesso de peso. A maioria não recebeu dieta mínima aceitável (58,7%), 28,0% consumiram queijo *petit suisse* e 42,0% receberam açúcar adicionado às preparações. Mães com menos de 20 anos ou com maior escolaridade tiveram maior chance de oferecer alimentos não saudáveis aos filhos ($p=0,03$). O consumo de frutas, legumes e verduras foi maior entre os filhos de mães acima de 20 anos ($p=0,04$).

Conclusão

O estudo revelou alta prevalência de sobrepeso e inadequação do consumo alimentar entre as crianças. A identificação de que mães adolescentes e/ou com maior escolaridade tendem a oferecer alimentação inadequada às crianças pode favorecer a definição de estratégias educativas específicas.

Palavras-chave: Nutrição do lactente. Sobrepeso. Suplementação alimentar.

INTRODUCTION

Eating habits in the first year of life are determinants of the formation of eating habits and the health and nutrition profiles of children [1]. Inadequate food consumption is

associated with increased morbidity, especially infectious diseases, malnutrition, overweight and micronutrient deficiencies [2].

The prevalence of childhood obesity has increased in developed and developing countries [1]. The World Health Organization

(WHO) recommends that strategies for the prevention and control of childhood obesity be directed especially at the first years of life because this time frame is a window of opportunity for interventions on eating habits, physical activity and sleep duration [3]. These interventions should mainly involve the family due to their importance in the formation of eating habits, self-control of food intake and formation of a pattern of eating behavior. The home environment and family lifestyle exert a strong influence on food preferences and may affect the nutritional balance of food [4-7].

In the face of current scientific evidence on the deleterious consequences of inadequate infant feeding in the short and long term, the WHO and the Brazilian Ministry of Health have developed manuals and guides for parents and caregivers with strategies for adequate dietary guidance during this phase of life [8-11].

National studies on the dietary patterns of children in the first two years of life note a predominantly dairy diet with insufficient amounts of vegetables, legumes and meats and the inclusion of food considered unhealthy [12-14]. This scenario attracted the attention of national and international organizations, which recently intensified actions to promote healthy supplementary food.

In this context, the present study aims to analyze the feeding profiles of infants at the end of the first year of life. The infants were born to mothers participating in a cohort of pregnant women of the ProcriAr Project. Additionally, we studied the influence of maternal characteristics on the patterns of food consumption by the infants.

METHODS

This study is part of the study "Influence of Nutritional Factors and Urban Atmospheric Pollutants on Lung Health of Children: A cohort study in pregnant women from the western area

of the city of São Paulo – ProcriAr" ("*Influência dos fatores Nutricionais e Poluentes Atmosféricos Urbanos na Saúde Pulmonar de Crianças: um estudo de coorte em gestantes da Zona Oeste do município de São Paulo: ProcriAr*"), which was approved by the Research Ethics Committees of CAPPesq (0068/10) and the São Paulo city hall (CAEE: 0205.0.162.162-10).

This is a cross-sectional study nested within a cohort of pregnant women (N=384). The study involves a non-probabilistic sample in which complete data for children between 10 and 13 months of age obtained at the last cohort follow-up visit were analyzed. Approximately 30% of the children were lost during follow-up.

In the original cohort study, the inclusion criteria were pregnant women with a gestational age less than 13 weeks (confirmed by ultrasonography) who were enrolled in prenatal care at 3 health units of the west region of the city of São Paulo *Unidade Básica de Saúde* ([UBS, Basic Health Unit] *Jardim Boa Vista*, UBS *Jardim São Jorge* and UBS *Paulo VI*). Those with twins and with the following morbidities were excluded: hypertension, diabetes *Mellitus*, cardiopathies, pneumopathies or other chronic diseases. Quarterly domiciliary visits were performed during the pregnancy in which clinical exams were performed to evaluate health conditions and questionnaires were applied on food consumption by the pregnant women. Additional information was collected on age, ethnicity, schooling, income, marital status and formal work.

The weights and lengths of the children were measured following the recommendations of the Technical Standard of the *Sistema de Vigilância Alimentar e Nutricional* (Sisvan, Food and Nutrition Surveillance System) [15] and were recorded in duplicate without rounding. The average was calculated later. The weight measurements were obtained using a *Tanita* (São Paulo, SP, Brazil) brand digital pediatric scale model BD585, and the length measurements were performed using a formica

infant anthropometer (Sanny, *São Bernardo do Campo*, SP, Brazil; scale in centimeters).

For the nutritional diagnosis of the children, Body Mass Index (BMI) was used following the reference standard of the WHO [16] according to gender and age and was analyzed with the Anthro.v.3.2.2 program (World Health Organization, Geneva, Switzerland). Children with values lower than -2 Z-scores were considered to have malnutrition, those with values above -2 and below +1 were considered eutrophic, those with values greater than +1 and less than or equal to +2 were considered at risk of overweight, and those with values above +2 Z-scores were considered overweight [16].

Infant food intake was assessed by applying a 24-hour recall to the mothers following the WHO recommendations [8]. The dietary practices of the children were analyzed qualitatively according to the following indicators adopted by the WHO: consumption of solid or pasty foods, minimum dietary diversity, minimum frequency of meals and minimum acceptable diet [8,9].

For construction of the indicator "consumption of solid or pasty foods", the original indicator was adapted considering the recommendations of the Ministry of Health of Brazil [10], which suggests that a child should receive the same food consumed by the family from the age of 8 months with minor modifications that include mashed, shredded, crushed or minced food. For this study, rice, beans, pasta, potatoes, meats, eggs, vegetables and fruits in pieces and mashed food were considered.

The Minimum Dietary Diversity (MDD) indicator was constructed from the consumption of any amount of food from each of the following groups: (1) cereals, breads and tubers; (2) legumes and vegetables; (3) fruits; (4) milk and dairy products, including breast milk, cow milk, infant formulas, yogurts and cheeses; (5) meats, offal and eggs and (6) leguminous foods. The MDD indicator was considered adequate

when the child consumed at least one food from 4 or more of the above groups.

The Minimum Meal Frequency indicator took into account the number of meals received during a day without distinction between meals and snacks. In this study, we considered only salty preparations, such as rice, beans, pasta, potatoes, meats, eggs and offal, for lunch and dinner. Consumption of milk, breads, plain biscuits and fruits was considered a snack depending on the time at which the child ate them. This indicator was used as a proxy for energy intake [9].

Following the recommendation of the Ministry of Health [10], this indicator was considered adequate for breastfed children when they consumed 5 meals/day; for those not breastfed, the addition of one more meal (collation) was recommended for a total of 6 meals/day. However, the WHO [9] recommends one meal less for each category (*i.e.*, 4 meals for breastfed children and 5 for non-breastfed children). In this study, the two recommendations were evaluated for comparison purposes.

The concomitant consumption of these foods was evaluated for the Fruit, Legume and Vegetable (FLV) consumption indicator.

The Minimum Acceptable Diet (MAD) indicator is composed of both minimum dietary diversity and minimum meal frequency following the recommendations of the Brazilian Guide [10,11].

The "unhealthy food consumption" indicator was also analyzed according to the "Ten steps for a healthy diet: Food guide for children under two years old" ("*Dez passos para uma alimentação saudável: Guia alimentar para crianças menores de dois anos*") of the Ministry of Health of Brazil [10].

Unhealthy foods were *petit suisse* cheese, candies, lollipops, chocolate, sandwich cookies, cake (simple and with filling), chips, fried foods (pastries, appetizers and fries), cold meats (hot dog, ham, bologna and sausage), noodles, soft

drinks and processed juices as well as sugar added to the preparations. For the calculation of the indicator of unhealthy foods, the consumption of at least one of the foods mentioned above was considered.

A descriptive analysis of the results was performed, and logistic regression models were elaborated by adopting “unhealthy food consumption” and “FLV consumption” as the outcomes. The following maternal explanatory variables were considered: age (≤ 20 years or > 20 years), ethnicity (white or brown/black), schooling (≤ 8 years or > 8 years), marital status (married/consensual union or single/separate/widow), income (≤ 3 minimum wages or > 3 minimum wages), work (work outside the home or housewife/student), birth weight ($< 2500g$ or $\geq 2500g$), consumption of breast milk (yes or no), and gender of the child (female or male). In the final model, the gender and weight excess variables were inserted as fitting variables, and those presenting $p < 0.20$ were included in the bivariate analysis. The significance level adopted was $p \leq 0.05$ considering two-tailed alternative hypotheses.

The data analyses were performed using the Epi Info (Centers for Disease Control and Prevention, Atlanta, Georgia, United States) 3.5 program and Stata version 11 (College Station, Texas, United States).

RESULTS

A total of 254 children participated in this study. The characteristics of the studied children and their mothers are presented in Table 1.

Table 2 presents the indicators of the quality of food received by children. More than half of the children consumed food in pieces that was rich in iron and attained the minimum diet diversity. Most breastfed and non-breastfed children met the WHO recommendation regarding the number of meals per day, but less than half of the children were considered adequate

Table 1. Characteristics of mothers and children aged 10 to 13 months. ProcriAr Project. São Paulo (SP), Brazil, 2016.

Characteristics	n	%
<i>Mothers</i>		
<i>Age</i>		
≤ 20 years	25	13.8
> 20 years	219	86.2
<i>Ethnicity</i>		
White	99	39.1
Brown/Black	154	60.9
<i>Education</i>		
≤ 8 years	193	76.3
> 8 years	60	23.7
Missing	1	
<i>Income</i>		
≤ 3 minimum wages	157	61.8
> 3 minimum wages	42	16.5
Not declared	55	21.7
<i>Marital status</i>		
Single/Separate	88	34.8
Married/Consensual Union	165	65.2
<i>Work out of the home</i>		
Yes	116	45.7
No	138	54.3
<i>Type of delivery</i>		
Normal/Forceps	100	54.4
Caesarean section	84	45.6
<i>Parity</i>		
Primiparous	111	43.7
Multiparous	143	56.3
<i>Childrens</i>		
<i>Gender</i>		
Male	121	47.6
Female	133	52.4
<i>Birth weight</i>		
Low weight	16	6.4
Adequate weight	233	93.6
<i>Mean age</i>		
12.1 months		
<i>Nutritional diagnosis</i>		
<i>BMI/Age</i>		
Undernourished	3	1.2
Eutrophic	158	62.7
Risk of overweight	64	25.4
Overweight	22	8.7
Obesity	5	1.9

according to the Brazilian Guide. Slightly more than half of the children did not meet the MAD.

The food consumption is detailed in Table 3. In the analysis of the unhealthy patterns of food marker consumption for this age group, the high consumption of *petit suisse* type cheese, industrialized juice and the addition of sugar to the preparations stands out.

The logistic analysis results (Table 4) showed that mothers under the age of 20 years or with more schooling were more likely to offer unhealthy foods to their children.

Table 2. Feeding characteristics of infants aged 10 to 13 months. São Paulo (SP), Brazil, 2016.

Food quality indicators	n	%
<i>Consumption of solid or pasty foods</i>		
<i>In pieces</i>	159	63.1
Mashed	76	30.2
Sieved/Liquefied	17	6.7
<i>Food consumption of iron source</i>		
Yes	232	91.3
No	20	7.9
<i>Minimum dietary diversity</i>		
<4 Food Groups	41	16.1
≥4 Food Groups	218	85.8
<i>Breastfeeding</i>		
Yes	109	42.9
No	145	57.1
<i>Minimum meal frequency</i>		
<i>Breastfed Children</i>		
Up to 3 meals	17	15.6
4 meals*	41	37.6
5 or more meals**	51	46.8
<i>Non-breastfed children</i>		
Up to 4 meals	29	20.0
5 meals*	61	42.1
6 meals**	55	37.9
<i>Minimum acceptable diet</i>		
Appropriate	105	41.3
Inappropriate	149	58.7

Note: *World Health Organization [8,9] (recommends 4 meals for breastfed children and adding one additional meal for non-breastfed children); **Ministry of Health [10] (recommends 5 meals for breastfed children and one meal for the non-breastfed children).

Table 3. Proportions and 95% Confidence Intervals (95%CI) of consumption of food considered unhealthy and of food groups according to the Ministry of Health proposal (2013) in children aged 10 to 13 months. São Paulo (SP), Brazil, 2016.

Variables	%	95%CI
<i>Non-healthy food</i>		
Petit Suisse-type yogurt	27.9	22.4–33.5
Candy, lollipop, chocolate	5.1	2.4–7.8
Sandwich cookie	5.9	3.0–8.8
Simple cake	2.7	0.7–4.8
Cake with filling	4.7	2.1–7.3
Salty snack	4.3	1.8–6.8
Fried foods	9.0	5.5–12.6
Cold meats	7.5	4.2–10.7
Instant noodles	4.3	1.8–6.8
Soda	2.7	0.7–4.8
Industrial juice	29.5	23.9–35.2
Sugar added	42.1	36.0–48.2
<i>Food Groups</i>		
Cereals, breads and tubers	98.0	96.3–99.7
Legumes	74.8	69.5–80.2
Milk and dairy products	98.8	97.5–100.0
Meat, offal and eggs	72.0	66.5–77.6
Fruits	55.1	48.9–61.3
Vegetables and legumes	61.0	54.9–67.1
Fruits, legumes and vegetables	55.1	48.9–61.1
Oil and fat	96.8	94.7–99.0

We also observed that FLV consumption was higher among the children whose mothers were 20 years or older in the adjusted analysis and with the interaction of the mother's schooling and income variables (Table 5).

DISCUSSION

The present study presents a high prevalence of overweight infants at the end of the first year of life. The food consumption analysis showed that an unhealthy nutritional balance of the diet and maternal characteristics, such as age and education, were associated with the dietary profiles of the children.

Table 4. Estimates of crude and adjusted *Odds Ratios* (OR) with respective 95% Confidence Intervals (95%CI) and *p*-values for variables associated with unhealthy food intake in children aged 10 to 13 months. *São Paulo* (SP), Brazil, 2016.

Variables	Crude OR	<i>p</i> -value	Adjusted OR	95%CI	<i>p</i> -value
<i>Gender</i>					
Female	1				
Male	0.83	0.48	0.78	0.46–1.32	0.36
<i>Birth weight</i>					
≥2500g	1				
<2500g	1.01	0.98	-	-	-
<i>Breastfed</i>					
No	1				
Yes	1.12	0.64	-	-	-
<i>Body mass index</i>					
Eutrophic	1				
Overweight	1.5	0.36	1.52	0.62–3.69	0.35
<i>Age</i>					
>19.9 years	1				
≤19.9 years	2.22	0.06	2.45	1.04–5.79	0.04
<i>Ethnicity</i>					
White	1				
Brown/Black	1.06	0.83	-	-	-
<i>Education</i>					
≤8 years	1				
>8 years	1.74	0.06	1.92	1.05–3.51	0.03
<i>Income</i>					
≤3 MW	0.85	0.66	-	-	-
>3 MW	1				
<i>Marital status</i>					
Married/Consensual Union	1				
Single/Separate	1.22	0.46	-	-	-
<i>Work out of the home</i>					
No	1				
Yes	0.96	0.87	-	-	-
<i>Parity</i>					
Primiparous	1.19	0.51	0.84	0.48–1.49	0.56
Multiparous	1				

The excess weight was higher than the 6.5% reported by the PNDS–2006 for children under 2 years of age in Brazil and similar to the value reported for the southeast region (10.0%). However, this research was performed ten years ago in children under two years of age, which may indicate worsening of children's nutritional statuses [17]

Consumption of food with adequate consistency was observed in 63.0% of the infants, but 22.0% of the children received soup, and 10.5% of them received sieved/liquefied soup. The analysis of this indicator in other studies showed similar results at different ages; for instance, in Cuba, the rate of introduction of solids and pasty foods in infants between 6

Table 5. Estimates of crude and adjusted *Odds Ratios* (OR) with respective 95% Confidence Intervals (95%CI) and *p*-values for variables associated with fruit, legume and vegetable consumption in children aged 10 to 13 months. *São Paulo* (SP), Brazil, 2016.

Variables	Crude OR	<i>p</i> -value	Adjusted OR*	95%CI	<i>p</i> -value
<i>Gender</i>					
Female	1				
Male	0.96	0.86	1.4	0.75–2.66	
<i>Low weight at birth</i>					
No	1				
Yes	1.37	0.56			
<i>Breastfed</i>					
No	1				
Yes	0.93	0.78			
<i>Body mass index</i>					
Eutrophic	1				
Overweight	0.63	0.26		0.19–1.47	0.227
<i>Age</i>					
>19.9 years	2.7	0.009	2.98	1.06–8.34	0.004
≤19.9 years	1				
<i>Ethnicity</i>					
White	1				
Brown/Black	0.96	0.88			
<i>Education</i>					
≤8 years	1				
>8 years	0.89	0.72			
<i>Income</i>					
≤3 MW	1				
>3 MW	1.01	0.98			
<i>Marital status</i>					
Married/Consensual union	1				
Single/Separate	0.79	0.37			
<i>Work out of the home</i>					
No	1				
Yes	1.6	0.04	1.8	0.95–3.54	0.07
<i>Parity</i>					
Primiparous	0.99	0.96			
Multiparous	1				

Note: *Adjusted analysis considering the interaction between income and maternal schooling.

and 7 months of age was 67.4% [18], in *Rio de Janeiro*, 60.3% of children under 1 year of age received food at the proper consistency [19], and in *Guarapuava*, Southern Brazil, the prevalence of adequacy was 77.0% in children between 6 and 8 months of age [20]. However, Garcia *et*

al. [13] found an even lower prevalence (35.0%) in the age group between 9 and 24 months in the Northern region. Because this parameter was an indicator recommended to evaluate the introduction of solid and pasty foods in the 6–to–8–month age range, the findings of this

study were particularly worrisome because the infants were analyzed at the end of the first year of life, when recommendations indicated that they should eat the food consumed by the family. Notably, another repercussion of the late introduction of solid foods was shown by a study in England in which children who were introduced food in pieces after 9 months of age faced greater problems with food and as a consequence consumed less varieties of foods (mainly fruits and vegetables) at 7 years of age [21].

Regarding the consumption of foods considered unhealthy, our results are in line with research previously conducted in Brazil, although the age groups were different. The repercussions of this consumption are deleterious and are associated with anemia, overweight and food allergies, as shown by some studies [22-24]. Additionally, these ultraprocessed foods are manufactured with large amounts of oil, fats, sugars, sodium, additives, flavorings and flavor enhancers to make the products more palatable and are poor in protein, fiber and micronutrients [25], which impairs the food quality offered to children and reduces the consumption of healthy foods [26]. A study in children who consumed sweetened foods early showed that they lost interest in healthy foods, increased their interest in sweet foods and consequently were overweight in the long run [27].

The minimum dietary diversity indicator was met by the majority of the children (96%) studied, showing that the children were able to meet the WHO recommendation in terms of variety [8]. However, because this indicator is considered a proxy for micronutrient density, the ideal is the presence of all food groups daily in the age group studied.

The indicator that evaluates the minimum meal frequency differs from the number of adequate meals proposed by the WHO (2010) and the Brazilian Food Guide, which adds one more meal for each group of children (lactating or not). Considering the WHO recommendation,

we found that the majority of breastfed or non-breastfed children met the recommendation. However, according to the Brazilian Guide, less than half of the children were adequate, especially the group of non-lactating children, in which approximately 63% of the children did not meet the minimum meal frequency. Saldan *et al.* [20] also found differences in prevalence in the comparison between the WHO indicator (99%) and the Brazilian Guide (75%). This result should be considered a concern because it is an indicator that is considered a proxy for energy intake [10]. A population study conducted in Nigeria showed that indicators of minimum meal frequency and minimum dietary diversity worsened significantly during the period from 2003–2013 regardless of the socioeconomic statuses of the mothers. Furthermore, mothers with a higher schooling level and access to health services were more likely to meet the minimum acceptable diversity and minimum acceptable diet recommendations [28].

When analyzed separately, the above indicators appear to be more sensitive in populations with food deprivation and low socioeconomic development [29]. However, analysis of the minimum acceptable diet, which was a composite indicator, seemed to better reflect the feeding situation in Brazilian children because less than half of the children received a minimum acceptable diet (45.5%). The study in *Rio de Janeiro* showed a drop of 67.7% to 56.5% in dietary adequacy from 1998–2008 [19].

In the present study, we observed that adolescent mothers were 2.4 times more likely to offer foods considered unhealthy for their children and were less likely to offer fruits and vegetables (*Odds Ratio* [OR] = 0.33). Additionally, women with a higher education (>8 years) were 1.9 times more likely to offer unhealthy foods.

Other studies have found similar results showing an association between increased maternal age and increased consumption of FLV as well as younger maternal age and increased

consumption of unhealthy foods [30-32]. In relation to this problem, we can consider two hypotheses: the price of fruits and vegetables is high compared to cookies, salty snacks and sweetened liquids and, therefore, easier to provide to children; and teenage mothers tend to adopt unhealthy eating habits, in which FLV consumption is less frequent, and end up offering a similar diet to their children [33].

Among the limitations of this study, we highlight those inherent to studies conducted with self-reported information, which is subject to recall biases or influenced by socially appropriate beliefs or behaviors. The use of 24-hour recall may lead to overestimation of some indicators of infant feeding. Another aspect concerns the studied population, who are children remnants of a cohort study of pregnant women from the western area of the city of *São Paulo*.

Nevertheless, the results are relevant because they show a high prevalence of infants at the end of the first year of life who do not receive the adequate number of meals per day, do not meet the acceptable minimum diet and receive unhealthy foods at an early age. The finding that adolescent mothers and/or mothers with more schooling tend to offer inadequate supplementary feeding to their children can favor the definition of specific educational strategies for these groups.

In this scenario, permanent education should be implemented for health professionals, and strategies should be expanded to advance the promotion of healthy complementary food. Although we recognize that Brazil has taken an important step in adopting policies to promote healthy complementary feeding, much work still needs to be done in basic health care, including the continuous monitoring of feeding practices during childhood.

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CONTRIBUTIONS

SRDM SALDIVA contributed to the conception of the study, data analysis and writing of the manuscript. PG BONINI collaborated in the preparation of the database, bibliographic review and writing of the manuscript. SI VENANCIO, RPV FRANCISCO and S VIEIRA collaborated in the design of the study and revision of the manuscript.

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