

Association between maternal perception of children's nutritional status and diet quality of schoolchildren

Luana da Silva Baptista Arpini¹
Geovane Carlos Barbosa²
Gláucia Figueiredo Justo³
Luciane Bresciani Salaroli⁴
Maria del Carmen Bisi Molina⁴

¹ Secretaria de Saúde do Estado do Espírito Santo, Hospital Estadual Infantil Nossa Senhora da Glória. Cariacica-ES, Brasil.

² Faculdade do Centro Leste, Departamento de Engenharia Biomédica. Serra-ES, Brasil.

³ Universidade Federal do Rio de Janeiro, Instituto de Estudos em Saúde Coletiva. Rio de Janeiro-RJ, Brasil.

⁴ Universidade Federal do Espírito Santo, Departamento de Educação Integrada em Saúde, Curso de Nutrição. Vitória-ES, Brasil.

Correspondence

Luana da Silva Baptista Arpini
E-mail: luanaarpini@hotmail.com

Abstract

Objective: To assess the association between maternal perception of children's nutritional status and diet quality of schoolchildren from urban and rural regions. *Methods:* A cross-sectional approach, with 1,788 schoolchildren (1,272 in urban and 516 in rural areas). Sociodemographic, anthropometric and dietary data were collected. The ALES Index (School Child Diet Index) was used to assess diet quality. The chi-square test was used to determine differences in ratios among groups, and a logistic regression model was used to adjust associated variables. *Results:* Schoolchildren had higher percentages of low diet quality both in urban (40.4%) and in rural areas (38.6%). Consistency between maternal perception and children's nutrition diagnosis has not influenced overall diet quality. Race/skin color (black/brown), lower socioeconomic class (C and D + E) and low (<3 years of study) and average (4-10 years) maternal educational level increased the odds of poor diet quality of schoolchildren. *Conclusion:* There was no association between children's dietary pattern and consistency between maternal perception and diagnosis of children's nutritional status. However, the socioeconomic determinants have directly influenced the diet quality of the schoolchildren.

Key words: Perception. Nutritional Status. Feeding. Diet. Child. Schoolchildren's Health.

Introduction

Diet quality is essential for children's proper growth and development.¹ Schoolchildren, in particular, should be encouraged by their parents to have proper eating behaviors, since at this age range, there are increasingly independent and make their own choices about food consumption. According to a study by Kranz et al.,² for every one-year increase in age, there is a loss of approximately two points in diet quality scores, i.e., as children grow older, the overall quality of their diet is decreased.

Despite numerous attempts to encourage healthy eating habits, schoolchildren's diets currently fail to meet the recommended standards. Data from the National Health Survey (PeNSE)³ showed regular intake of unhealthy foods (soft drinks, snacks, sweets) and insufficient intake of healthy foods (fruits, vegetables, fibers) by Brazilian adolescents. This is highly indicative of the need to promote health-oriented and nutrition education initiatives aimed at younger people.

Research conducted in the Brazilian cities of Ouro Preto-MG,⁴ Vitória-ES⁵ and Florianópolis-SC,⁶ with children and adolescents aged between six and 14, also found low diet quality scores, reflecting a food standard at odds with the recommended values.

A prospective cohort study with children and adolescents between the ages of seven to 15 in the UK confirms that a dietary pattern with high-calorie, high-fat and low-fiber foods is associated with higher levels of obesity and risk of obesity in children and adolescents, regardless of the practice of physical activity.⁷ The quality of children's diet may be influenced by a wide variety of factors, i.e. biological and behavioral aspects, preferences and family eating habits, food availability, socioeconomic factors, cultural beliefs and parental perceptions.¹

Whereas child feeding behavior can be modified to suit the environment where children live, parents' perceptions can be a crucial tool for determining diet quality, thus having a positive or negative influence on food supply.¹

Maternal perception of their children's body weight can influence control of children's dietary practices, mediated or not by maternal concern for children's weight.⁸ Therefore, maternal perception, when consistent with children's nutritional status, can provide early dietary changes.^{5,8} On the other hand, inconsistency between the former and the latter can neglect such inappropriate eating patterns and behavior; for example, pressure for children to eat larger portions than would be suitable for their age - thus leading to overeating and weight gain.^{8,9} It may also compromise treatment effectiveness against nutritional disorders.⁸

In addition, maternal perception of children's nutritional status may be associated with the overall quality of the diet offered to children, especially at school age, when there is the highest obesity prevalence.⁸ However, a recently published systematic review of the literature on the subject showed that there are no studies that have evaluated the quality of food consumed by children. This reinforces the need for further research to evaluate the relationship between maternal perception of children's nutritional status and quality of children's diet, using appropriate methods of measuring food consumption.⁸ Thus, the aim of this study is to analyze the association between maternal perception of children's nutritional status and quality of food consumed by schoolchildren in two distinct regions in Brazil.

Methods

This is a descriptive cross-sectional study, held in 2013, based on the analysis of data collected under the projects "Saúdes Vitória" and "Saúdes Santa Maria", developed with the objective of investigating aspects related to nutrition and health of schoolchildren enrolled in the first primary education cycle of public and private schools in the municipalities of Vitória and Santa Maria de Jetibá, in the state of Espírito Santo, Brazil.

Both male and female children were included as participants. They were aged between seven and 10 on the day of data collection, and were regularly attending school. An Informed Consent form (IC) was signed by a parent or guardian. Another condition was that parents had provided answers, in the questionnaire, to the associated variables (maternal perception of children's weight, nutritional status and quality of children's diet). There was a total of 1,788 children: 1,272 in urban areas and 516 in rural areas.

Urban population is understood, in the present study, as the schoolchildren who participated in the study "Saúdes Vitória", held in 2007 in the capital of the state of Espírito Santo, which is considered as 100% urbanized. The study used a representative sample of the city's population for age, sex and enrollment status, both in public and private schools. The rural population is comprised of the participants in the study "Saúdes Santa Maria", conducted in 2009 in a rural municipality colonized by Pomeranians, who try to keep the original culture and traditions, for example, food and dialect. This sample was also representative of the school population.

The three-stage stratified random sampling procedure was adopted in Vitória,¹⁰ and the two-stage sampling in Santa Maria de Jetibá.¹¹ They were planned so that both towns were completely covered geographically according to their school zones, sex and age group of interest. Data on socioeconomic and biological aspects and life habits were collected from a structured questionnaire

answered by mothers. For schoolchildren from the rural area, the questionnaires could be answered in the Pomeranian language, in order to show respect and avoid embarrassing the respondents at the time of interview.

Food consumption information was collected from a food frequency questionnaire (FFQ) with 18 food items. After a pilot study¹² was conducted prior to data collection, the FFQ that was applied to the rural population had to be adapted because of the specific food culture of this population.

To evaluate diet quality, the proposal of Molina et al.⁵ was used; it takes into account the intake frequency of 15 food items and the practice of having the first morning meal (breakfast), referred to as ALES Index (School Child Diet Index). This index was developed for the school population of the state of Espírito Santo, and it results in a summary score, which evaluates the overall diet quality of children aged 7-10, classified according to the following score: <3 = low quality; between ≥ 3 and <6 = average quality; > 6 = good quality.⁵

Among the associated variables, data on consistency between maternal perception and children's nutritional status was collected through the question: "How do you rate your child's current status?"; The answer choices were "underweight", "healthy weight", "overweight" or "very overweight"; the answers were later linked to children's nutritional status and recategorized as: consistent (when the mother's perception matches the child's nutritional status diagnosis) and inconsistent (when a mother underestimates or overestimates her child's nutritional status). Maternal BMI was estimated using the weight and height values reported by mothers and classified according to the World Health Organization (WHO);¹³ maternal education corresponded to the last year of study completed by mothers, categorized as ≤ 3 , 4-10, ≥ 11 years; mothers' accounts were collected on the presence or absence of concern for their children's weight, and socioeconomic status was measured through the scoring scale proposed by the Brazilian Association of Research Companies (ABEP)¹⁴ and reclassified as A + B, C and D+E.

Variables for children were gender, age (obtained by subtracting the year of data collection and children's birthdate), race/color (rated by 2 independent interviewers and categorized into "white" and "black/brown"), and nutritional status (measured by calculating body mass index - BMI - using weight and height measurements, and classified according to the cutoff points proposed by Onis et al.¹⁵).

Anthropometry was performed in schools by trained professionals using the standardized procedures proposed by WHO.¹⁶ Weight was measured in kilograms with Tanita® Family BWF 100 gram precision scales (Tanita, Illinois, USA). During the assessment, children were weighed barefoot and wearing light clothing, arranged in the center of the scale in an orthostatic position.

Height was measured in centimeters, with a one-millimeter accuracy using a Seca® 206 portable stadiometer (Seca, Hamburgo, BRD). The stadiometer was mounted on a plain wall without skirting boards. At the time of measurement, the children were barefoot, with their hair loose, and with their head, buttocks and heels touching the wall, while they maintained a fixed gaze ahead.

For data analysis, databases were carefully merged after being checked against the questionnaires, and compiled in the Microsoft Office Excel 2007 software. They were then analyzed in the software IBM SPSS For Windows version 20.0. Descriptive statistics were calculated for the variables of interest. The chi-square and Fisher's exact tests were used to determine differences in ratios among groups ($p < 0.10$). To evaluate the association between maternal perception of children's nutritional status and quality of children's diet as well as fit them with socioeconomic factors, the variables that were significant at 10% in the univariate analysis were included in the multinomial logistic regression model.

For compliance with ethical principles, the provisions of Resolution no.196/96 of the National Health Council were respected in this study, which was conducted after approval by the Research Ethics Committee of the Federal University of Espírito Santo and by the local authorities in each municipality.

Results

Table 1 shows the sociodemographic characteristics of the study population according to region of residence.

Table 1. Characterization of the sample of schoolchildren aged 7-10 years, according to region of residence. Vitória (2007) and Santa Maria de Jetibá (2009).

Variable	Total		Schoolchildren's region of residence			
			Urban		Rural	
	n	%	n	%	n	%
Sex						
Male	802	44.9	532	41.8	270	52.3
Female	986	55.1	740	58.2	246	47.7
Age						
7	404	22.6	249	19.6	155	30.0
8	495	27.7	358	28.1	137	26.6
9	481	26.9	356	28.0	125	24.2
10	408	22.8	309	24.3	99	19.2
Nutritional status						
Underweight	92	5.1	73	5.7	19	3.7
Normal weight	1333	74.6	902	70.9	431	83.5
Overweight	221	12.4	182	14.3	39	7.6
Obesity	27	7.9	115	9.0	27	5.2
Race/Color						
White	804	47.3	418	32.9	386	81.8
Black/Brown	897	52.7	811	63.8	86	18.2
Diet quality						
Low	713	39.9	514	40.4	199	38.6
Average	452	25.3	309	24.3	143	27.7
Good	623	34.8	449	35.3	174	33.7

Variable	Total		Schoolchildren's region of residence			
			Urban		Rural	
	n	%	n	%	n	%
Socioeconomic status						
A+B	282	17.9	262	23.5	20	4.3
C	659	41.8	392	35.2	267	57.7
D+E	637	40.4	461	41.3	176	38.0
Maternal age (years)						
≤ 30	513	29.4	358	29.0	155	30.3
> 30	1233	70.6	877	71.0	356	69.7
Maternal education (years)						
≤ 3	59	3.4	50	4.0	9	1.8
4 – 10	935	53.3	521	41.8	414	81.5
≥ 11	759	43.3	674	54.1	85	16.7
Maternal BMI						
Underweight	48	3.1	38	3.3	10	2.7
Normal weight	814	53.3	627	54.1	187	50.7
Overweight	465	30.4	353	30.5	112	30.4
Obesity	201	13.2	141	12.2	60	16.3
Consistency of MP						
Consistent	1087	60.8	741	58.3	346	67.2
Inconsistent	700	39.2	531	41.7	169	32.8
Maternal concern						
Yes	996	58.2	725	60.5	271	53.0
No	714	41.8	474	39.5	240	47.0
Total	1788	100	1272	71.1	516	28.9

The urban area had the highest female percentage of students (58.2%), aged 8-9 years (28.0%), non-white (63.8%), lower socioeconomic class (41.3 %) and higher maternal education (54.1%). By contrast, the rural area is made up mostly by white people (81.8%) younger male schoolchildren (52.3%), middle socioeconomic class and average maternal education (57.7% and 81.5%, respectively), as show in Table 1.

As for the children’s nutritional status, the results showed a higher prevalence of both excess weight (overweight and obesity) and underweight for urban schoolchildren. Still, it is evident that both regions had many more overweight than underweight schoolchildren (23.3% and 5.7% in the urban areas, and 12.8% and 3.7% in the rural areas, respectively) (Table 1). The same was true for mothers, who had excess weight prevalence rates of over 40% (42.7% in urban areas and 46.7% in rural areas).

Both in urban and in rural areas, most mothers had higher percentage of perception of the nutritional status of their children, corresponding to the diagnosis, and they reported concern with the current or future weight of their children. However, there is greater consistency for mothers who live in rural areas (67.2% versus 60.8%) and higher percentages of concern of mothers from urban areas (60.5% versus 53.0%), according to data on Table 1.

Table 2 shows the results of the univariate analysis between the variables and diet quality of schoolchildren aged 7-10 years in urban and rural areas.

Table 2. Difference in ratios observed between diet quality and associated factors among schoolchildren aged 7-10 years. Vitória (2007) and Santa Maria de Jetibá (2009).

Variable	Total		Diet quality						<i>p</i>
			Low		Average		Good		
	n	%	n	%	n	%	n	%	
Sex									
Male	802	44.9	299	41.9	208	46.0	295	47.4	0.118
Female	986	55.1	414	58.1	244	54.0	328	52.6	
Age (years)									
7	404	22.6	162	22.7	115	25.4	127	20.4	0.192
8	495	27.7	190	26.6	126	27.9	179	28.7	
9	481	26.9	182	25.5	115	25.4	184	29.5	
10	408	22.8	179	25.1	96	21.2	133	21.3	

Variable	Total		Diet quality						<i>p</i>
			Low		Average		Good		
	n	%	n	%	n	%	n	%	
Nutritional status									
Underweight	92	5.1	43	6.0	18	4.0	31	5.0	0.466
Normal weight	1333	74.6	533	74.8	342	75.7	458	73.5	
Overweight	221	12.4	79	11.1	62	19.1	80	12.8	
Obesity	142	7.9	58	8.1	30	13.7	54	8.7	
Race/Color									
White	804	47.3	282	41.5	212	49.5	310	52.2	<0,001
Black/Brown	897	52.7	397	58.5	216	50.5	284	47.8	
Region of Residence									
Urban	1272	71.1	514	72.1	309	68.4	449	72.1	0.321
Rural	516	28.9	199	27.9	143	31.6	174	27.9	
Socioeconomic class									
A+B	282	17.9	76	12.3	70	17.5	136	24.2	<0,001
C	659	41.8	262	42.5	165	41.1	232	41.4	
D+E	637	40.4	278	45.1	166	41.4	193	34.4	
Maternal age (years)									
≤ 30	513	29.4	217	31.5	136	30.8	160	26.0	0.068
> 30	1233	70.6	472	68.5	305	69.2	456	74.0	
Maternal education (years)									
≤ 3	59	3.4	36	5.1	11	2.5	12	2.0	<0,001
4 – 10	936	53.4	421	60.1	229	51.6	286	46.9	
≥ 11	759	43.3	243	34.7	204	45.9	312	51.1	

Variable	Total		Diet quality						<i>p</i>
			Low		Average		Good		
	n	%	n	%	n	%	n	%	
Maternal BMI									
Underweight	48	3.1	18	3.0	15	3.9	15	2.8	0.085
Normal weight	814	53.3	309	51.2	198	52.1	307	56.3	
Overweight	465	30.4	179	29.7	117	30.8	169	31.0	
Obesity	201	13.2	97	16.1	50	13.2	54	9.9	
Consistency of MP									
Consistent	1087	60.8	414	58.1	275	61.0	398	63.9	0.094
Inconsistent	700	39.2	299	41.9	176	39.0	225	36.1	
Maternal concern									
Yes	996	58.2	411	60.7	252	56.9	333	56.4	0.245
No	714	41.8	266	39.3	191	43.1	257	43.6	
Total									

The variable “consistency of maternal perception” showed a statistically significant association with diet quality of schoolchildren ($p = 0.094$); the highest prevalence remained in the three classifications of the ALES Index (Table 2). The variables “race/color” ($p = <0.001$), “socioeconomic class” ($p = <0.001$), “maternal age” ($p = 0.068$), “maternal BMI” ($p = 0.085$) and “maternal education” ($p = <0.001$) were also significantly associated with overall diet quality. Black/brown schoolchildren, from a lower socioeconomic class and whose mothers had average educational level were associated with the lowest level of diet quality. White, middle class schoolchildren whose mother had a higher level of education were associated with the best diet quality scores (Table 2).

All the above variables were included in the multinomial logistic regression model for fitting. However, the association between consistency of maternal perception and diet quality of schoolchildren did not remain significant. The variables that remained associated with diet quality, after fitting, were the socioeconomic determinants: race/color, socioeconomic status and maternal education (Table 3).

Table 3. Factors associated with diet quality of schoolchildren aged 7-10: adjusted odds ratio (OR) with respective confidence interval (95% CI). Vitória (2007) and Santa Maria de Jetibá (2009).

Variable	Diet quality			
	Low		Average	
	OR (IC95%)	p	OR (IC95%)	p
Race/Color				
White	1,000		1,000	
Black/brown	1,400 (1,090 – 1,797)	0.008	1,030 (0,781 – 1,359)	0.835
Socioeconomic class				
A+B	1,000		1,000	
C	1,505 (1,046 – 2,166)	0.028	1,343 (0,912 – 1,978)	0.135
D+E	1,507 (1,009 – 2,250)	0.045	1,700 (1,106 – 2,611)	0.015
Maternal education (years)				
≤ 3	2,979 (1,423 – 6,239)	0.004	1,070 (0,435 – 2,635)	0.882
4 – 10	1,658 (1,252 – 2,194)	<0,001	0,962 (0,707 – 1,309)	0.807
≥ 11	1,000		1,000	

* Reference category: good quality diet.

Black/brown schoolchildren ($p = 0.008$; OR = 1.400, 95% CI 1.090 to 1.797) were 40% more likely to have a poor diet. Middle class children ($p = 0.028$; OR = 1.505, 95% CI 1.046 to 2.166) and lower class children ($p = 0.045$; OR = 1.507, 95% CI 1.009 to 2.250) were approximately 51% more likely to have low diet quality scores. In addition, a lower socioeconomic level ($p = 0.015$; OR = 1.700, 95% CI 1.106 to 2.611) was also associated with average quality diet.

As for maternal education, it is observed that the students whose mothers reported fewer than three years of study ($p = 0.004$; OR = 2.979, 95% CI 1.423 to 6.239) were nearly three times more likely to have low diet quality; those whose mothers reported intermediate-level education ($p, 0.001$; OR = 1.658, 95% CI 1.252 to 2.194) had an increase of approximately 66% in the odds of having a low dietary content. Therefore, the lower the number of years of education completed by mothers, the more likely the children are to have low quality diet.

Sex, age, nutritional status, region of residence and concern for children's weight were not associated with schoolchildren's diet quality and, therefore, they were not included in the logistic regression model.

Discussion

A systematic review of the literature conducted by Arpini et al.⁸ showed that maternal perception of children's body weight is associated with control of infant feeding practices, especially feeding restriction and/or pressure to eat. However, there are no reports in the scientific literature of such an association with children's diet quality. In the present study, which evaluated overall diet quality, the results showed that the consistency between maternal perception and children's nutritional diagnosis showed no significant association with the quality of the diet consumed by the schoolchildren. Socioeconomic characteristics were the variables that impacted the overall quality score of the schoolchildren's diet.

In both urban and rural regions, the schoolchildren had higher percentages of low quality diet. It was assumed that in a rural community whose economy is based on production of fresh fruits and vegetables, foods considered as "healthy" and markers of a good quality diet are consumed in larger quantities, while in an urban area, greater access to processed foods, among others factors, should result in higher prevalence of a low-quality diet. However, the data have shown similarities between the two populations, i.e., both of them showed higher percentages of low-quality diet, although in urban areas this figure is slightly higher (40.4% versus 38.6%), as shown in Table 1.

A study by Lourenço¹⁷ with farming families in Rio de Janeiro showed that for this population, the objective of agricultural production is sale; growing crops for themselves is considered a waste of time, especially when compared to the convenience of buying food and the increased value given to manufactured products at the expense of naturally produced ones. In addition, improved infrastructure for access to food, such as electricity, transportation and local markets, may be favoring the consumption of processed foods in the countryside.¹⁷

Indeed, a qualitative survey with mothers of students from the rural region in this study, showed that the dietary practices of this population are associated with adults' working routine, as well as with the family's food preferences and food availability.¹² Diets are based on bread or sprout (traditional food in the Pomeranian culture) with butter or animal fat in snacks; and rice, beans, meat, flour and salad, in main meals.¹² A similar dietary pattern was described by Bezerra et al.¹⁸ in Brazilian rural areas, and by Lourenço¹⁷. The latter also pointed that agricultural work and the small variety of vegetables grown are likely to discourage the consumption of farmers' produce. Thus, one should consider that food is related to the socio-cultural context of individuals and should not be treated only as a biological issue.¹²

Although the mothers of the two study regions have shown higher percentage of consistency and concern for their children's weight, those living in rural municipalities showed greater consistency in the perception of their children's nutritional status, while those in urban areas were more concerned with their children's weight. A study by Kobarg & Vicira¹⁹ showed that maternal care beliefs and practices may be different depending on the context of the area where mothers reside. Mothers from the countryside usually provide more time for child-rearing and value discipline to a greater extent, while mothers living in urban centers, because of greater possibility of access to educational and vocational training, are more worried about their children.

Maternal education may also influence the quality of infant feeding, through food choices and knowledge or understanding of nutrition information gathered mainly through the media.^{1,5}

In this study, the fact that mothers were illiterate (<3 years) increased by approximately three times the chance that their children might have a low quality diet, and this risk decreased with increasing education. In a national study, low maternal education was associated with regular intake of soft drinks, sweets, cookies and sausages, and increased maternal education led to increased consumption of vegetables by adolescents.³

Another factor associated with diet quality for this population was schoolchildren's race/color. Black/brown children showed a 40% increase in the probability of having a low quality diet. The variable "race/color" can be considered a socioeconomic marker in this study, since research conducted in schools in the urban area (predominant population) was positively associated with maternal education and socioeconomic status.²⁰

Family income, in turn, can also hamper access to healthy food.²¹ The National Health Survey (PeNSE)³ showed that low socioeconomic status increases the likelihood of intake of food considered as "unhealthy", and higher socioeconomic status reflects an increased frequency of consumption of fruits and vegetables by schoolchildren.

On the other hand, it must be considered that the increase in income may lead to increased frequency of food consumption outside the household, especially in urban areas, with a predominance of high-calorie and low-nutrient foods, in both regions (urban and rural),¹⁸ thus reflecting a poor diet. Accordingly, the results of a study conducted with schoolchildren aged seven to ten in Florianópolis-SC showed that the increase in household income decreased the likelihood that schoolchildren could meet the recommended intake of fruit and vegetables.⁶

In this study, lower socio-economic levels increased the probability that the schoolchildren should have lower diet quality scores, a result consistent with the one found by Lazarou & Newby²² when reviewing studies carried out in developed countries on the quality of children's diet.

In addition, other considerations may be made for the analysis of factors associated with the quality of children's diet. Children's diets may be influenced by the eating habits of adults.¹ When adults follow proper dietary recommendations, infant feeding is twice as likely to meet the recommended patterns.²³ Children are also more likely to eat foods that are available - so if a larger quantity is offered, food intake tends to be higher.²¹ Another factor is that parents often want to please their children and offer sweets as a reward to ensure that they will eat healthy foods.¹

Numerous studies show a Brazilian dietary pattern characterized by frequent consumption of food with low nutritional value and insufficient intake of fruits and vegetables, especially by children and adolescents.^{3,4,6,18,24,25} This stresses the need for interventions to improve diet quality, thus encouraging healthy eating habits at an early age.

Although the present study shows consistent results for knowledge of predictors of schoolchildren's diet quality, the cross-sectional design hinders causal inference; however, such design is appropriate to the objectives of this study because it is effective in describing the characteristics of the population and identifying associated factors.

Another possible limitation of this study refers to the mothers' verbal description of the nutritional status they realize in their children, used for collecting data on the variable "consistency of maternal perception." This is a subjective method, but it is accepted and widely used in the literature because it is consistent with the approach to the subject. The method used to measure food consumption is limited to assessment of usual diet intake but it allows the estimation of the overall quality of schoolchildren's diet through the frequency of food consumption.

The comparison of the results of this study with the results of other studies is limited because of differences in populations, dietary assessment methods and instruments used, and associated variables. Despite the limitations described, the results presented here are consistent with other transverse and longitudinal studies. Furthermore, it may be useful as a basis for further investigations.

Thus, further studies are needed to investigate factors related to diet quality in different populations, including its relationship with maternal perception of children's nutritional status. These studies should also enable the understanding of these factors in different urban and rural contexts.

Conclusion

There was no association between infant feeding and consistency between maternal perception and nutritional status diagnosis. However, socioeconomic factors have had direct influence on the schoolchildren's diet quality.

References

1. Adamo KB, Brett KE. Parental perceptions and childhood dietary quality. *Matern. Child Health J.* 2014; 18(4):978-95.
2. Kranz S, Findeis JL, Shrestha SS. Use of the Revised Children's Diet Quality Index to assess preschooler's diet quality, its sociodemographic predictors, and its association with body weight status. *J. Pediatr. (Rio J).* 2008; 84(1):26-34.
3. Levy RB, Castro IRR, Cardoso LO, Tavares LF, Sardinha LMV, Gomes FS, et al. Food consumption and eating behavior among Brazilian adolescents: National Adolescent School-based Health Survey (PeNSE), 2009. *Ciênc. Saúde Coletiva* 2010; 15(Supl. 2):3085-97.
4. Coelho LG, Cândido APC, Machado-Coelho GLL, Freitas SN. Association between nutritional status, food habits and physical activity level in schoolchildren. *J. Pediatr. (Rio J).* 2012; 88(5):406-12.
5. Molina MCB, Lopéz PM, Faria CP, Cade NV, Zandonade E. Preditores socioeconômicos da qualidade da alimentação de crianças. *Rev. Saúde Pública* 2010; 44(5):785-732.
6. Assis MAA, Calvo MCM, Kupek E, Vasconcelos FAG, Campos VC, Machado M, et al. Qualitative analysis of the diet of a probabilistic sample of schoolchildren from Florianópolis, Santa Catarina State, Brazil, using the Previous Day Food Questionnaire. *Cad. Saúde Pública* 2010; 26(7):1355-65.
7. Ambrosini GL, Emmett PM, Northstone K, Howe LD, Tilling K, Jebb SA. Identification of a dietary pattern prospectively associated with increased adiposity during childhood and adolescence. *Int. J. Obes.* 2012; 36(10):1299-305.
8. Arpini LSB, Queiroz DMF, Corrêa MM, Salaroli LB, Molina MCB. Relação entre a percepção materna do peso corporal do filho e as práticas alimentares infantis. *Rev Bras Pesq Saúde.* 2014; 16(3):140-153.
9. Manios Y, Moschonis G, Grammatikaki E, Anastasiadou A, Liarigkovinos T. Determinants of Childhood Obesity and Association with maternal perceptions of their children's weight status: The "GENESIS" Study. *J. Am. Diet Assoc.* 2010; 110(10):1527-31.
10. Faria CP, Cade NV, Nascimento LR, Molina MCB. Prevalência de excesso de peso em crianças de sete a dez anos de Vitória-ES, Brasil: um estudo de base escolar. *Rev. Bras. Pesqui. Saúde* 2011; 13(1):31-7.
11. Justo GF, Callo GQ, Carletti L, Molina MCB. Nutritional extremes among school children in a rural Brazilian municipality. *Rural Remote Health* 2012; 12(4):2220.
12. Justo GF, Callo GQ, Molina MCB, Cade NV. Hábitos alimentares entre mães de escolares residentes em um município rural do Espírito Santo: um estudo observacional. *Rev. Bras. Pesq. Saúde* 2011; 13(3):17-21.
13. World Health Organization. The international classification of adult underweight, overweight and obesity according to BMI. Geneva: WHO; 2004.
14. Associação Brasileira de Empresas de Pesquisa. Critério de classificação econômica Brasil [Internet]. 2010 Acesso em: 20 mar. 2014. Disponível em: <http://www.abep.org/criterioBrasil.aspx>
15. Onis M, Onyango AW, Borghi E, Siyam A, Nishida C, Siekmann J. WHO Development of a WHO growth reference for school-aged children and adolescents. *Bulletin of the World Health Organization* 2007; 85(9):660-667.

16. World Health Organization. Physical status: the use and interpretation of anthropometry indicators of nutritional status. Geneva: WHO; 1995. Report No. 854.
17. Lourenço AEP. Plantando, colhendo, vendendo, mas não comendo: práticas alimentares e de trabalho associadas à obesidade em agricultores familiares do Bonfim, Petrópolis, RJ. *Rev. Bras. Saúde Ocupacional* 2012; 37(125):127-42.
18. Bezerra IN, Souza AM, Pereira RA, Sichieri R. Consumption of foods away from home in Brazil. *Rev. Saúde Pública* 2013; 47:200s-211s.
19. Kobarg APR, Vieira ML. Mothers' beliefs and practices about child development in rural and urban contexts. *Psicol. Reflex. Crítica* 2008; 21(3):401-8.
20. Molina MCB, Faria CP, Montero P, Cade NV. Correspondence between children's nutritional status and mothers' perceptions: a population-based study. *Cad. Saúde Pública* 2009; 25(10):2285-90.
21. Patrick H, Nicklas TA. A review of family and social determinants of children's eating patterns and diet quality. *J. Am. Coll. Nutr.* 2005; 24(2):83-92.
22. Lazarou C, Newby PK. Use of dietary indexes among children in developed countries. *Adv. Nutr. Int. Rev. J.* 2011; 2(4):295–303.
23. Zuercher JL, Wagstaff DA, Kranz S. Associations of food group and nutrient intake, diet quality, and meal sizes between adults and children in the same household: a cross-sectional analysis of U.S. households. *Nutr J.* 2011; 10:131.
24. Costa LCF, Vasconcelos FAG, Corso ACT. Factors associated with adequate fruit and vegetable intake by schoolchildren in Santa Catarina State, Brazil. *Cad. Saúde Pública* 2012; 28(6):1133-42.
25. Souza AM, Pereira RA, Yokoo EM, Levy RB, Sichieri R. Most consumed foods in Brazil: National Dietary Survey 2008-2009. *Rev. Saúde Pública* 2013; 47:190s-199s.

Received: January 30, 2015

Revised: May 13, 2015

Accepted: June 15, 2015