Food insecurity, food expenses and consumption of sugar and soft drinks in households with and without children and/or adolescents

Insegurança alimentar, gasto com alimentos e consumo de açúcar e refrigerante em domicílios com e sem crianças e/ou adolescentes

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ABSTRACT

Objectives

To estimate the frequency of food insecurity in households with and without children/adolescents; compare food expenses, sugar and soft drinks consumption in these households; and to analyze the relationship between food insecurity and demographic/socioeconomic variables with food expenses, and sugar and soft drinks consumption in households with and without children/adolescents.

Methods

Cross-sectional study with 628 households in *Campinas*, SP, Brazil. Food insecurity was estimated by the Brazilian Household Food Insecurity Measurement Scale. The dependent variables were the proportion of food expenses, and consumption of sugar and soft drinks; and the independent ones included food security/insecurity condition, monthly family income, gender, age and education of the household head.

Results

The frequency of food insecurity was higher in households with children/adolescents than in households without minors (41.4% *vs*. 27.9%). The proportion of food expenses was higher in households with children/adolescents and in all households it was associated with lower family income and, in households with minors, to the presence of a female householder. Soft drinks consumption was higher in households with children/adolescents; and was related to higher income in all households, and to the presence of male householder in households with minors. Sugar consumption in households with children/adolescents was associated with higher income, male gender and education level of the household head (<12 years). In households without children/adolescents, the higher sugar consumption was associated with food insecurity and the household head's education (<8 years).

Conclusion

In households with children/adolescents there was a greater frequency of food insecurity and a greater commitment of income with food. Food insecurity was associated with increased sugar consumption in households without children/adolescents.

Keywords: Carbonated beverages. Food and nutrition security. Food consumption. Social conditions. Sugars.

RESUMO

Objetivos

Estimar a frequência de insegurança alimentar em domicílios com e sem crianças/adolescentes; comparar o gasto com alimentos e o consumo de açúcar e de refrigerante nestes domicílios; e analisar a relação da insegurança alimentar e de variáveis demográficas/socioeconômicas com o gasto com alimentos e com o consumo de açúcar e de refrigerante em domicílios com e sem crianças/adolescentes.

Métodos

Estudo transversal com 628 domicílios de Campinas, SP, Brasil. A insegurança alimentar foi estimada pela Escala Brasileira de Insegurança Alimentar. As variáveis dependentes foram proporção de gasto com alimentos e consumo de açúcar e refrigerante; as independentes incluíram condição de segurança/insegurança alimentar, renda familiar mensal, sexo, idade e escolaridade do chefe da família.

Resultados

A frequência de insegurança alimentar foi maior nos domicílios com crianças/adolescentes do que nos domicílios sem menores (41,4% vs. 27,9%). A proporção de gasto com alimentos foi superior nos domicílios com crianças/adolescentes; em todos esteve associada ao menor rendimento familiar e, nos domicílios com menores, à presença de chefe da família do sexo feminino. O consumo de refrigerante foi maior em domicílios com crianças/adolescentes, relacionou-se à maior renda em todos os domicílios e à presença de chefe da família do sexo masculino em domicílios com menores. O consumo de açúcar nos domicílios com crianças/adolescentes associou-se à maior renda, sexo masculino e escolaridade do chefe <12 anos. Nos domicílios sem crianças/adolescentes, o maior consumo de açúcar esteve associado à insegurança alimentar e à escolaridade do chefe da família <8 anos.

Conclusão

Nos domicílios com crianças/adolescentes, houve maior frequência de insegurança alimentar e maior comprometimento da renda com a alimentação. A insegurança alimentar associou-se ao aumento do consumo de açúcar em domicílios sem crianças/adolescentes.

Palavras-chave: *Refrigerantes. Segurança alimentar e nutricional. Consumo de alimentos. Condições sociais. Açúcares.*

INTRODUCTION

Inadequate nutrition is one of the main risk factors related to the increase in chronic Non-Communicable Diseases (NCDs), as well as the increase in malnutrition and overweight [1-4]. In 2015, the worldwide prevalence of overweight and obesity among adults was approximately 39% [5]. In 2016, the number of children and adolescents between five and 19 years old in these conditions was 340 million [6].

In Brazil, the classification of healthy eating has recently taken on a new concept, no longer based exclusively on values or nutrient profile of food, but also on the extent and purpose of industrial processing to which foods are subjected before their acquisition by consumers, recognizing that the consumption of ultra-processed foods has a negative impact on health [7,8]. Ultra-processed foods are those foods formulated industrially based on substances extracted, derived from food constituents, or synthesized in the laboratory with additives and which are characterized by high palatability and energy value, and low nutritional quality [7,8].

Food insecurity, characterized by irregular and insufficient access to food, qualitatively and quantitatively, contributes to overweight and obesity and malnutrition; the high cost of nutritious foods, the stress of living with food insecurity and physiological adaptations to food restriction may partially explain why families with food insecurity may be at greater risk of becoming overweight, and also the coexistence of malnutrition and overweight in the same geographic space and household [9,10].

Several studies have described the relationship between food insecurity and low income, and the presence of minors in the household [11-13]. Particularly, the presence of children or adolescents in the household changes the profile of food consumption by Brazilian adults. A study by Rodrigues *et al.* [14] noted that in families in the first income tertile, the presence of minors resulted in the consumption of traditional foods, with increased consumption of rice among women, and beans and vegetables among men and women. Adults in the highest tertile, who lived with children or adolescents, had a mixed consumption of healthy and unhealthy foods [14].

The Dietary Guidelines for the Brazilian Population, based on the NOVA food classification, characterizes sugar as a processed culinary ingredient, which use should be moderate, and soft drinks as ultra-processed, strongly recommending the avoidance of their consumption [7,8]. In the *Pesquisa Nacional de Saúde* (PNS 2013, National Health Survey) the consumption of soft drinks was reported in 32% of children under two years of age, and an analysis by the *Pesquisa Nacional de Demografia e Saúde da Criança e da Mulher* (PNDS 2006, National Survey on Demography and Health of Children and Women) pointed out that more than one third of preschoolers consumed soft drinks and artificial juices in four or more days of the week [15,16]. In the *Pesquisa de Orçamentos Familiares* (POF 2017-2018, Survey of Family Budgets), adolescents correspond to the age group characterized with the highest frequency of *per capita* average consumption of soft drinks and stuffed cookies [17].

Considering the importance of this public health problem, the present study aims to estimate the frequency of food insecurity in households with and without Children and/or Adolescents (C/A); to compare the expenses on food and the consumption of sugar and soft drinks in these households; and to analyze the relationship between food insecurity and demographic and socioeconomic variables with food expenses, and the consumption of sugar and soft drinks in households with and without C/A.

METHODS

A cross-sectional study was undertaken using data from a research carried out in *Campinas*, SP, Brazil, which investigated the association between food insecurity and chronic diseases in adults living in the Southern, Southwest and Northwest Health Districts of the city of *Campinas*, SP.

Household interviews were conducted in 2011-2012, by health professionals trained and supervised in their field work. Using a questionnaire programmed in the Android 2.1 system and inserted into smartphones, residents aged ≥18 years knowledgeable of the family dynamics in relation to the demographic, socioeconomic, and family food profile were interviewed.

Probabilistic sampling was used, and the details of the methods have been published [18]. The sample required for the original work was 720 households; however, residents of 694 households were interviewed; there was thus a sample loss of 3.6%. In this study, households with missing data from the *Escala Brasileira de Insegurança Alimentar* (EBIA, Brazilian Household Food Insecurity Measurement Scale) (n=3) and households with no stated income (n=63) were excluded. The final sample included 628 households.

To investigate the condition of food insecurity, EBIA was used, composed of 14 close-ended questions, referring to the experience of food insufficiency at its different levels, in the last three months. The scale ranges from zero to 14 points, and the levels are classified as follows: zero is equal to food security, 1-5 points in families with children under 18 or 1-3 points in families without minors, indicate mild food insecurity; 6-9 points in families with minors or 4-5 points in families without minors, indicate moderate food insecurity; and 10-14 or 6-8 points, respectively, correspond to severe food insecurity [13].

The dependent variables were the proportion of monthly *per capita* family expenses with food, and daily *per capita* consumption of table sugar and soft drinks. The proportion of monthly *per capita* family expenses on food was obtained by adding the expenses (in $ *Reais*) at supermarkets and other establishments, cooking gas, and eating out, in relation to *per capita* monthly family income. Information on consumption of table sugar and soft drinks was collected through the questions *"How many kilos of sugar are used in this house per month?"* and *"How many liters of soft drinks are consumed in this house per month?"*. For the conversion to the daily *per capita* consumption, the total monthly values of kilos and liters were converted into grams and milliliters, respectively, with further division by the number of residents in the household and number of days of the month (equal to 30.43 days in a month considering a four year cycle, including leap year).

Independent variables included the presence of children and/or adolescents in the household (age <18 years) (yes; no), food security condition (food security; mild food insecurity; moderate food insecurity; severe food insecurity), number of residents in the household and income in reais or minimum wages to calculate the monthly family income *per capita* (<1 minimum wage; ≥1 minimum wage), gender of the head of the family (male; female), age of the head of the family (18-39 years; 40-59 years; ≥60 years), and family's head education (≤8 years; ≥9 years and <12 years; ≥12 years). The minimum wage in force on the date of the interview was considered (R$ 545.00 in 2011, and R$ 622.00 in 2012).

The Kolmogorov-Smirnov test was performed to verify the normality of the variables. As none of them showed significant adherence to the normal probability distribution, the medians calculation was used for the description. Qualitative variables were described by proportion estimates. The comparison of differences between medians and proportions was performed using the Mann-Whitney U test and Pearson's chi-square test, respectively, considering a significance level of 5%. For variables with three or more response categories, residual analysis was performed to identify significant differences between them.

To evaluate the relationship of food insecurity and sociodemographic variables, with the proportion of monthly *per capita* family expenses with food, a beta regression analysis was used, excluding five households that had expenses greater than 100%. Analysis of the relationship between independent variables and daily *per capita* consumption of sugar and soft drinks was performed using generalized linear regression models with the Gamma function. Households that had consumption equal to zero for sugar (n=14) and soft drinks (n=99) were excluded, as this distribution is used for modeling continuous positive asymmetric data on the right (greater than zero). The models were estimated using the GLIMMIX procedure of the SAS software. Separate models were performed for households with and without children and/or adolescents. All independent variables were included in the models, remaining those with $p<0.05$. The level of significance adopted for the statistical tests was 5%. The analysis was carried out with the support of the statistical software SAS version 9.4 [19].

Written consent from respondents or guardians, in the case of illiterate individuals, was obtained prior to the collection of information. This study was approved by the *Comitê de Ética em Pesquisa da Universidade Estadual de Campinas* (Certificate n. 1135/2010).

RESULTS

The Table 1 shows the characteristics of food expenses and consumption, condition of food security and demographic and socioeconomic variables of households with and without children and/or adolescents. The medians of the proportions of monthly *per capita* family expenses on food and of the *per capita* daily consumption of sugar and soft drinks were higher in households with C/A, but only statistically significant differences were observed for the proportion of *per capita* monthly expenses on food, and daily *per capita* consumption of soft drinks ($p<0.05$). The frequency of food insecurity was higher in households with C/A than in households without minors (41.4% *vs*. 27.9%, respectively ($p=0.005$). There were higher frequencies of mild food insecurity in households with C/A, and food security in households without C/A ($p=0.005$). In addition, the frequency of monthly *per capita* family income <1MW was higher in households with C/A (35.0% *vs*. 18.5%; $p<0.001$). In households with C/A, male heads of households predominated (72.0%), under the age of 60 years (84.2%), while in households without C/A, elderly heads predominated. As for education, in both household categories, household heads with education ≤8 school-years predominated, but the proportion of household heads who attended school during periods between 9 and <12 years was significantly higher in households with C/A.

Table 1 – Food characteristics, food security condition and demographic and socioeconomic variables of households with and without children and/or adolescents. *Campinas*, SP, Brazil, 2011-2012.

	Households with children and/or adolescents (n=309)		Households without children and/or adolescents (n=319)		p-value
	n	Median	n	Median	
Proportion of *per capita* monthly family expenses on food (%)	309	24.5	319	20.9	0.013****
Daily *per capita* consumption					
Sugar (g)	309	41.1	319	32.9	0.896****
Soft drinks (ml)	309	98.6	319	87.6	0.013****
	n	%	n	%	
Food security condition					0.005*****
Food security#	181	58.6	230	72.1	
Mild food insecurity#	102	33.0	71	22.3	
Moderate food insecurity	15	4.9	12	3.8	
Severe food insecurity	11	3.5	6	1.8	
Monthly *per capita* family income					<0.001*****
≥1 Minimum wage	201	65.0	260	81.5	
<1 Minimum wage	108	35.0	59	18.5	
Gender of the head of the household*					0.032*****
Male	201	72.0	178	63.6	
Female	78	28.0	102	36.4	
Age of the head of the household **					<0.001*****
18-39 years#	89	32.0	30	10.8	
40-59 years#	145	52.2	116	41.6	
60 years and more#	44	15.8	133	47.6	
Education level of the head of the household***					<0.001*****
≥12 years of school	22	7.9	25	9.0	
≥9 and <12 years#	104	37.5	57	20.4	
≤8 years#	151	54.6	197	70.6	

Note: *69 Did not answer; **71 Did not answer; ***72 Did not answer; ****Mann-Whitney U test; *****Pearson's Chi-square test; #Differences observed between categories in the residual analysis.

The Table 2 shows the beta regression analysis of the relationship between the condition of food security and demographic and socioeconomic variables with the proportion of monthly *per capita* family expenses with food (in %) in households with and without C/A. In households with and without C/A, the higher the monthly *per capita* family income, the lower the proportion of monthly *per capita* family expenses on food (both $p<0.001$). In households with C/A, the proportion of monthly *per capita* family expenses on food was also lower in those households that had a male head ($p=0.023$).

The Table 3 presents the generalized linear regression model with the Gamma function of the relationship between the condition of food security and demographic and socioeconomic variables with the daily *per capita* consumption of sugar (in g) and soft drinks (in ml) in households with and without C/A. In households with C/A, higher monthly *per capita* family income ($p=0.001$), male family's head ($p<0.001$), and head's education <12 years ($p<0.001$), were positively associated with sugar daily *per capita* consumption. Higher soft drinks daily *per capita* consumption was independently associated with higher monthly *per capita* family income ($p<0.001$), and lower daily *per capita* consumption of soft drinks was associated with male household head ($p=0.001$). In households without C/A, the greater the food insecurity and the household head education ≤8 years, the greater the daily *per capita* consumption of sugar ($p=0.017$ and $p=0.010$, respectively); and the increase in monthly *per capita* family income, was associated with a higher daily *per capita* consumption of soft drinks ($p<0.001$).

Table 2 – Beta regression model of the relationship between the condition of food security and demographic and socioeconomic variables with the proportion of monthly *per capita* family expenses on food (in %), in households with and without children and/or adolescents (separate models). *Campinas*, SP, Brazil, 2011-2012.

Independent variables	Households with children and/or adolescents		Households without children and/or adolescents	
	β	*p*-value	β	*p*-value
Food security condition (food security reference)	0.1137	0.236	0.1338	0.197
Monthly *per capita* family income*	-0.00039	<0.001	-0.00049	<0.001
Gender of the head of the household (female reference)	-0.2298	0.023	-0.03353	0.730
Age of the head of the household*	-0.00229	0.354	-0.00035	0.787
Education level of the head of the household ≥9 and <12 years (reference ≥12 years)	-0.07785	0.676	-0.1321	0.494
Education level of the head of the household ≤8 years (reference ≥12 years)	-0.05230	0.784	-0.07385	0.676

Note: *The variables Monthly *per capita* family income and Age of the head of the household were included as continuous variables.

Table 3 – Generalized linear regression model with Gamma function of the relationship between the condition of food security and demographic and socioeconomic variables with the daily *per capita* consumption of sugar (in g) and soft drinks (in ml), in households with and without children and/or adolescents (separate models). *Campinas*, SP, Brazil, 2011-2012.

Independent variables	Households with children and/or adolescents				Households without children and/or adolescents			
	Sugar		Soft drinks		Sugar		Soft drinks	
	β	*p*-value	β	*p*-value	β	*p*-value	β	*p*-value
Food security condition (food security reference)	-	-	-	-	0.2207	0.017	-	-
Monthly *per capita* family income*	0.000252	0.001	0.000485	<0.001	-	-	0.000278	<0.001
Gender of the head of the household (female reference)	0.4527	<0.001	-0.3827	0.001	-	-	-	-
Age of the head of the household*	-	-	-	-	-	-	-	-
Education level of the head of the household ≥9 and <12 years (reference ≥12 years)	0.6096	<0.001	-	-	0.1647	0.340	-	-
Education level of the head of the household ≤8 years (reference ≥12 years)	0.9849	<0.001	-	-	0.2742**	0.010	-	-

Note: The values of the variables that were significant in the multiple models are shown. The values of the non-significant variables were replaced by a hyphen (-). *The variables Monthly *per capita* family income and Age of the head of the household were included as continuous variables; **In the model that assessed the daily consumption of sugar *per capita* in households without children and/or adolescents, the category ≤8 years of the variable Education level of the head of the household was compared with the reference category ≥9 and <12 years.

D I S C U S S I O N

In this study, the frequency of food insecurity was higher in households with C/A than in households without minors. The medians of the proportions of monthly *per capita* family expenses with food and of the daily *per capita* consumption of soft drinks were higher and statistically significant in households with C/A. In households with and without C/A, a higher proportion of food expenses was associated with lower family income; higher consumption of soft drinks was associated with higher income, and sugar consumption was higher as the education level of the head of the family decreased. In households with male heads and with C/A, sugar consumption was higher and that of soft drinks was lower. In households without C/A, food insecurity was associated with increased sugar consumption.

Similar to the findings of the present study, 2017-2018 POF data draw attention to the lower prevalence of food security in households with residents under 18 years of age (49.7%), showing also the greater vulnerability to moderate and severe food restriction in households with children and/or adolescents [13].

The percentage of the household budget for food is recognized as an indirect indicator of food insecurity in the household, and the lower the family's income and the greater the severity of food insecurity, the greater the proportion of the family income tends to be spent on food [13]. In this study, the median proportion of monthly *per capita* family expenses on food was higher in the households with C/A (24.5% *vs*. 20.9%). These values are close to those observed nationally in the lowest income households of the 2017-2018 POF (22.6%) [20]. The regression analyses pointed that family income is independently and inversely related to the proportion of expenses on food in households with and without C/A. In households with C/A, in addition to lower income, the proportion of spending on food was lower in those households headed by men. An explanation for this result would be that in this study the median monthly *per capita* family income was higher in households with male households' heads (data not shown). In addition, 2017-2018 POF showed that the gender of the household's head is associated with access to food, and in those households classified as having food security, 61.4% of them had men as a reference person [13]. In the present study, this value was 72.3% (data not shown). This fact was also reported in a meta-analysis study that showed that families headed by women were 75% more likely to be in a condition of food insecurity compared to families headed by men [21].

In addition to income, individuals' psychosociocultural issues can determine food consumption [22]. The usual diet of Brazilians has shown in the last decades, a progressive incorporation of ultra-processed foods with low nutritional value, such as sweets, pizzas, soft drinks, fried and baked snacks. Although this consumption increased in all income strata, the frequency grew as income increased. While the consumption of traditional foods such as rice and beans is higher in families with lower income, the consumption of fruits and vegetables also increases with income [17].

In this study, considering all households (with and without C/A), the median daily *per capita* consumption of sugar and soft drinks was 37g and 93mL, respectively. Assuming a 2000Kcal daily diet as a base and that 100mL of soft drinks contains 11g of sugar, the median values of daily *per capita* sugar and soft drinks consumption in this study represent 9.5% of the Total Energy Intake (TEI), a percentage that is almost double the WHO recommended value (<5%) [23].

The results of this study show that increased sugar consumption was associated with higher family income, lower family's head education, and male household heads. An analysis of total and added sugar consumption in Latin American countries, found that among Brazilians the average consumption of added sugar was 57.6g/day, being also higher among those with higher socioeconomic status [24]. A possible explanation for these results would be the nutritional transition stage which developing countries are going through, where income increase allows greater access and consumption of healthy but also of unhealthy foods [25]. Contrary to the findings of this study, in the 2017-2018 POF sugar had a greater relative participation in women's diet TEI than in that of men (6.1% *vs*. 5.4%), even though the comparison is debatable considering the differences in the survey techniques [17].

In households without C/A, the greater the food insecurity, the greater the sugar consumption. This result is noteworthy given that in the 2017-2018 POF, sugar purchases diminished as food insecurity worsened [13]. One factor that could explain this difference is that in this study 47.6% of no-C/A households' heads were of older age. The literature points out that the aging process causes physiological changes that include a decline in sensitivity to flavors, including sweet [26]. In this sense, elderly people tend to increase the amount of sugar added to foods and or preparations.

In Brazil and in other countries, assessments according to the presence of C/A in the household, especially regarding food security and adequate and healthy food consumption are important, given the biological vulnerability of this age group, and the consequences of their diet on their adult life [27,28]. PNDS 2006-2007 data showed that children under five years of age with low weight and who did not eat meat, fruits and vegetables every day, were more frequent in households with moderate or severe food insecurity, and that consumption of soft drinks and sweets among them was high, with a prevalence of daily soft drinks consumption of 29.3% in the Southeast Region [29,30].

In this study, the median daily *per capita* soft drinks consumption was higher in households with C/A, consistent with other studies that indicated a high consumption of soft drinks in this age group [15-17,30,31].

Further, the consumption of soft drinks was also higher as income increased in households with and without C/A, evidencing that soft drinks are more consumed by families with greater purchasing power. In other studies, a higher consumption of soft drinks was also observed in the higher income strata [17,32,33]. In households with C/A the consumption of soft drinks was lower in households headed by men, which may be related to the previously mentioned result of a lower proportion of spending on food in households with male heads.

In *Campinas*, in households with heads aged 18 to 39 years, the median daily *per capita* consumption of soft drinks was 133.3mL, while in households headed by individuals aged ≥60 years, it was 66.7mL (data not shown). Possible explanations for these data are that younger adults may have a habit of consuming more intermediate snacks between meals and a higher frequency of food consumption outside the household, and that the aging process, which includes increased NCDs development risk, can favor the adoption of a healthier lifestyle, with eventual positive changes in eating behavior, as part of the prevention or treatment of these diseases [17]; or else that the income of the elderly is committed with other items such as medications, health visits, and assistance to other family members.

It is important to emphasize that inadequate nutrition is one of the factors associated with increased risk for NCDs [1,2,4,7,27]. One of the family strategies to face the lack of food and hunger is the consumption maintenance of basic foods such as rice and beans, considered an excellent nutritional combination and, therefore, a protective factor for NCDs. On the other hand, there is also the purchase of cheaper foods, with high energy density and low in nutrients, but which induce satiety. The high consumption of these foods is considered a risk factor for overweight and development of NCDs [9].

Especially in the period from 2003 to 2016, much progress has been made in the field of food and nutrition in Brazil. Through investments in intersectoral programs, policies to reduce poverty and hunger and to promote healthy eating have been expanded and instituted [34]. Even so, the importance of food and cash transfer policies is enhanced, and health education and food and nutrition education programs, should pay attention to the increase in spending on unhealthy foods, previously not consumed due to lack of money.

We agree with Martins [35], that access which is facilitated by the large food industries that invest massively in the promotion and sale of these products, especially in the poorest and developing countries, demands strategies for the food quality promotion, including measures to regulate the marketing of ultra-processed foods and restriction of child advertising, protection of the school environment, adequate labeling of processed foods, and sugary drinks taxation.

Another fundamental point to improve access to adequate food is the investment in school meals and in policies that promote short-chain food systems, with support and fostering of family farming in

order to increase the consumption of fresh, safe and reasonably priced food, especially among the poorest families. In addition, the promotion of food environments that guarantee access to nutritionally adequate food should be considered, as well as the regulation of food processing and advertising.

Among the limitations of this study, it is worth noting that the sample originates from the three Health Districts of *Campinas*, with a population in worse socioeconomic conditions, which does not enable to evidence the differences between populations of different socioeconomic conditions, and it can also influence the variables that remain significant in the regression models [36]. In addition, another limitation is that sugar and soft drinks consumption data only represent household consumption, and do not include consumption outside the household. About 15% of households had soft drinks consumption equal to zero. The information was not considered due to the restriction of the regression model used. In this sense, such results should be considered with caution. However, it is noteworthy that there was no change in the results when imputing data near zero for cases with absent consumption. It should also be considered, the cross-sectional design of the study that does not allow the establishment of a cause and effect relationship, even if it exists, and the possible information bias since the answers are self-reported.

On the other hand, in a context of increased poverty, food insecurity, malnutrition and obesity, as well as an increase in NCDs related to food and the future repercussions of these conditions, the fact that a sample of the poorest sectors of the municipality was selected constitutes a strong point of this study. The results help to understand the relationship of spending on food and consumption of sugar and soft drinks in families with and without C/A. Furthermore, the identification, analysis, and monitoring of these conditions at the local level allows for more focused and assertive interventions, and they can add evidence to other studies with similar populations, expanding the external validation of these findings.

CONCLUSION

These data point to the urgency of reducing poverty by increasing family income, especially for families in situations of food insecurity and with children and/or adolescents, in order to guarantee access to nutritionally more adequate foods. Considering that only the increase in income does not guarantee access and the selection of healthy foods, these strategies should be accompanied by food and nutrition education, in all income strata, age groups and educational levels, since they are effective tools for the development of health-promoting dietary practices. In this connection, priority should be given to dietary guidelines based on food, as is the case of the Dietary Guidelines for the Brazilian Population.

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CONTRIBUTORS

BFNJ SOUZA elaborated the conception and design of this article, performed the statistical analyses, interpreted the data, and wrote and revised all sections and versions of the article. DFM CAMARGO collaborated in the review and final version of the article. AM SEGALL-CORRÊA guided and revised all sections and versions of the article. L MARÍN-LEÓN guided and revised all sections and versions of the article. PMSB FRANCISCO guided and revised all sections and versions of the article.

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