Food insecurity in households in Pernambuco, Northeast region of Brazil: contributions to the discussion on the violation of the right to adequate food

Situação de insegurança alimentar em domicílios de Pernambuco, Região Nordeste do Brasil: contribuições para discussão da violação do direito à alimentação[1]

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Abstract

This study aimed to investigate factors associated with food insecurity in households in the state of Pernambuco, in the Northeast region of Brazil. This is a cross-sectional study carried out in 1,008 private households. The investigation used the Brazilian Food Insecurity Scale (EBIA) and analyzed associations with socioeconomic and demographic variables, as well as practices related to eating. Prevalence ratio and adjustment were calculated using Poisson regression, and associations where p $<$ 0.05 were statistically significant. Food insecurity prevalence was 68.4%. Variables associated with insecurity were: education of the head of the family; per capita income; participation in the Bolsa Família Program; number of residents; occupation of the household; social class; practices and opinions about family eating habits. The greatest insecurity risk was found in those with the worst economic conditions, in beneficiaries of the Bolsa Família Program and in those who considered the lack of ultra-processed products to improve the family's diet. Food insecurity was linked to conditions of social vulnerability and to those who did not perceive that they had a good diet. Most of the subjects reported using resources of the Bolsa Família program to purchase food, which reinforces the importance of this strategy in promoting access to food.

Keywords: Food Security; Food Assistance; Socioeconomic Factors; Social Inequality.

Resumo

O objetivo deste estudo foi investigar os fatores associados à insegurança alimentar em domicílios do Estado de Pernambuco, localizado na região Nordeste do Brasil. Trata-se de um estudo transversal realizado em 1.008 domicílios particulares. Para a investigação, utilizou-se a Escala Brasileira de Insegurança Alimentar (EBIA) e foram analisadas associações com variáveis socioeconômicas, demográficas e práticas relacionadas à alimentação. Calculou-se razão de prevalência e ajuste por meio da regressão de Poisson, sendo estatisticamente significantes aquelas associações cujo p0,05. Encontrou-se prevalência de 68,4% de insegurança alimentar. Apresentaram associação com insegurança: escolaridade do chefe da família; renda *per capita*; participação no programa Bolsa Família; número de moradores; regime de ocupação do domicílio; classe social; práticas; e opiniões acerca da alimentação da família. O maior risco de insegurança foi encontrado naqueles com pior condição econômica, em beneficiários do Bolsa Família e naqueles que indicavam a falta de produtos ultraprocessados para melhorar a alimentação da família. Observou-se insegurança alimentar atrelada às condições de vulnerabilidade social e àqueles que não consideravam ter uma boa alimentação. Grande parte dos sujeitos referiram utilizar os recursos do Bolsa Família para aquisição de alimentos, o que reforça a importância dessa estratégia na promoção do acesso à alimentação.

Palavras-chave: Segurança Alimentar; Assistência Alimentar; Fatores Socioeconômicos; Desigualdade Social.

Introduction

Adequate and healthy food, an achievement resulting from social struggles, is legally a human right (Brasil, 2006). Despite this legal and inalienable recognition, there is an increased number of individuals experiencing situations of hunger, the most serious expression of food and nutritional insecurity (FAO; IFAD; UNICEF; WFP; WHO, 2021). In a recent survey carried out in Brazil, it was revealed that 125.2 million people experience some degree of food insecurity (FI) and 33 million face hunger (PENSSAN Network, 2022).

In the Brazilian scenario, hunger was denounced from the work of Josué de Castro, who showed that this problem is not due to the lack of food production, it is not a natural phenomenon and is directly related to political and social issues (Castro, 2008). Castro's studies showed the social determination and biological repercussion of the violation of the Human Right to Adequate Food and Nutrition (Dhana – Direito Humano à Alimentação e Nutrição Adequadas) and served as a basis for the discussion and development of Food and Nutrition Security (FNS) policies in the Brazilian context (Rigon; Bógus, 2016).

Conceptually, FNS is defined as:

> [...] realization of the right of all to regular and permanent access to quality food, in sufficient quantity, without compromising access to other essential needs, based on food practices that promote health, respect cultural diversity and are socially, economically, and environmentally sustainable (Brasil, 2006).

Two dimensions are articulated to understand FNS: food and nutrition. The first refers to availability, encompassing production, commercialization, and access to food. The second corresponds directly to the choice, preparation, consumption and biological use of the food and is related to health (Leão, 2013).

FNS has become one of the strategies for promoting development, since it is built from the perspective of Dhana (Direito Humano à Alimentação e Nutrição Adequadas) and relates to

food sovereignty, in view of the right of peoples to decide on their food (Maluf; Reis, 2013). The last Household Budget Survey (POF 2017-2018) showed that 36.7% of Brazilian private households were in FI, which corresponded to about 25.3 million households with some degree of concern about access to food (IBGE, 2020). Specifically in the state of Pernambuco, the 2017-2018 POF found a prevalence of 48.3% of FI, which, as observed nationally, was higher than the results of the latest National Household Sample Surveys (PNAD), which found 25.9% (in 2014) and 42.2% (in 2009) of FI in the state (IBGE, 2014). In addition to these surveys conducted nationwide, a survey conducted previously in Pernambuco found a prevalence of 61.8% of FI (UFPE; IPSA; SUSAN, 2011). Between the 2013 and 2017-2018 surveys, Pernambuco was among the ten states that had the largest number of households in hunger throughout the period (Ribeiro Junior et al., 2021)

Currently, the country is experiencing a scenario of setbacks in relation to the FNS guarantee, which becomes even more worrying in the context of the covid-19 pandemic, in addition to the cuts in investments in social policies, health and education (Alpino et al., 2020; Galindo et al., 2021). Considering this context, the objective of this study is to investigate the factors associated with FI in households in the state of Pernambuco.

Materials and methods

This is a cross-sectional study based on data from the IV State Health and Nutrition Survey (PESN), *Chronic Noncommunicable Diseases in the State of Pernambuco: prevalence, associated factors, health actions and services*, which occurred in 13 municipalities in the state of Pernambuco, located in the Northeast region of Brazil (SILVA, 2019).

For sample size calculation, the prevalence of 61.8% of FI, 95% confidence level and sampling error of 3% were taken into account, resulting in a minimum sample of 950 households. In total, 1,008 private households from Pernambuco were investigated in urban and rural areas. The sampling plan was probabilistic and stratified into three stages, whose primary selection units were the municipalities,

the secondary units were the census tracts and the tertiary units were the households, in which information was collected through questionnaires.

Data collection was developed between 2015 and 2016. The questionnaire used was based on the model adopted by the II and III PESN/97-2006, for comparative purposes and with the necessary extensions to cover the additional objectives of the research. For this study, we used forms related to socioeconomic, demographic, Food Security (FS) and food-related practices.

The situation of FS in the dimension of access to food was evaluated using the Brazilian Food Insecurity Scale (EBIA), composed of 14 questions for households with children and/or adolescents and eight questions for those without this population. Each affirmative answer corresponds to one point, and the sum of the points corresponds to the final score of the scale, whose classification is given according to the presence or absence of children under 18 years of age in the household (MDS, 2014). Households with negative answers to all questions (0 points) are considered to be in a situation of FS; mild FI: 1-5 points (households with people < 18 years of age) and 1-3 points (households without people <18 years age); moderate FI: 6-9 points (households with people < 18 years of age) and 4-5 points (households without people < 18 years of age); severe FI: 10-14 points (households with people < 18 years of age) and 6-8 points (households without people < 18 years of age) (MDS, 2014). For analysis in this study, we added mild, moderate and severe FI, creating a single category: FI, so that we worked with the dichotomous variable: FS/FI.

To evaluate the socioeconomic conditions of the households, we investigated education and occupation of the head of the family, *per capita* family income and participation in an income transfer program (Bolsa Família Program [PBF]). The demographic characteristics were evaluated through the area of residence, gender, age and color/race of the head of the family, number of residents and household occupation regime, water treatment for consumption, and social class, according to the criteria of the Brazilian Association of Research Companies (ABEP) (ABEP, 2014). For social class categorization, it was

verified, using descriptive analysis, the need to join categories B and C1, D and E, for better robustness in the multivariate analysis.

Practices and opinions on family food were also analyzed: way of purchasing food for consumption, place of purchase of most of the family's food, spending in the last month with the BFP benefit, opinion on food from the receipt of the BFP, the quality of the family's food, and foods missing to improve food consumption. Regarding the latter variable, in addition to the categories none and all, there were the following food options: fruits, vegetables, meats, beans, rice, pasta, yogurt, milk or cheese, cookies or other industrialized products. At the time of analysis, recategorization was performed according to the processing levels of the NOVA classification present in the Food Guide for the Brazilian Population (MS, 2014).

For analysis, the SPSS® software, version 13.0, was used, with simple frequencies and percentages for descriptive analysis of categorical variables and the chi-square test to verify the association between the independent variables and the outcome, in addition to the calculation of the Prevalence Ratio (PR) to verify the prevalence with the respective confidence interval (CI) of 95%. In all analyses, associations where p0.05 were considered statistically significant.

In the variables that had few *missing values*, the statistical feature of multiple imputation was used. Categories receiving values from the multiple imputation: FS (07 *missing values)* and PBF participation (01 *missing value).*

In order to control for possible confounding factors, Poisson regression with robust variance was performed with the variables where p 0.20 in the bivariate analysis. Before the regression, the occurrence of multicollinearity was tested, which was not detected. The variables were divided into three blocks: in block one, socioeconomic variables were included, in block two, demographic variables, and in block three, practices and opinions on food.

The research was approved by the Research Ethics Committee of the Health Sciences Center of the Federal University of Pernambuco in compliance with the regulatory standards for research involving human beings – Resolution No. 466/12 of the National Health Council.

Results

Among the 1,008 households evaluated, 68.4% were in a situation of FI (25.3% in mild FI, 31.4% in moderate FI and 11.7% in severe FI). It is noteworthy that approximately 64% of the households were located in the countryside of the state of Pernambuco, and 72.3% had a male head of the family, who, for the most part (61.3%), were between 30 and 59 years old (**Table 1**). Most of these heads of household did not declare themselves to be white (74%), 39.1% had up to four years of study, and 38% were formally working. Regarding the economic situation of the families, it is observed that most had a *per capita* income of up to 1/2 minimum wage (71.6%), and 52.2% were beneficiaries of the BFP. As characteristics of households, 63.7% had 4 residents, 65.5% lived in their own residence, 77.6% were classified as social class C2, D or E, and about 36% consumed untreated water (**Table 1**).

There was an association between the place of residence and FI, revealing that 78.4% of the residents of the urban countryside of Pernambuco were in such situation (**Table 1**). In addition, a significant increase in the prevalence of FI was also observed as there was a decrease in the age and education of the head of the family; among informal and unemployed workers, as there was a decrease in income; and among the beneficiaries of the BFP, in households with more than four residents, in those who were not their own, in those classified in social classes D and E and in households that consumed untreated water (**Table 1**).

Table 1 – Food security and insecurity (FS/FI) according to demographic and socioeconomic characteristics of households in the state of Pernambuco, Brazil, 2015-2016

VARIABLES	TOTAL (N=1008)		FS		FI		p
	n	%	N	%	n	%	
Area of residence							<0.001
Metropolitan Region of Recife	364	36.1	142	39.0	222	61.0	
Rural Countryside	352	34.9	114	32.4	238	67.6	
Urban Countryside	292	29.0	63	21.6	229	78.4	
Gender of the head of the family							0.270
Female	279	27.7	81	29.0	198	71.0	
Male	729	72.3	238	32.6	491	67.4	
Age of head of household (years)							<0.001
≤29	206	20.4	55	26.7	151	73.3	
30—39	266	26.4	73	27.4	193	72.6	
40—49	192	19.0	57	29.7	135	70.3	
50—59	160	15.9	47	29.4	113	70.6	
≥60	184	18.3	87	47.3	97	52.7	
Race of the head of the family							0.347
Black/Mixed Race/Asian/Indigenous	746	74.0	230	30.8	516	69.2	
White	262	26.0	89	34.0	173	66.0	
Schooling of the head of the family							<0.001
<4 years	394	39.1	99	25.1	295	74.9	
4 to 7 years	268	26.6	81	30.2	187	69.8	
8 to 10 years	137	13.6	46	33.6	91	66.4	
≥11 years	209	20.7	90	43.1	119	56.9	
Occupation of the head of the family							<0.001
Not employed	53	5.3	17	32.1	36	67.9	
Unemployed	107	10.6	18	16.8	89	83.2	
Informal worker	252	25.0	48	19.0	204	81.0	
Retired/Benefit	213	21.1	91	42.7	122	57.3	
Formal/self-employed worker	383	38.0	145	37.9	238	62.1	
Per capita income (MW)[a]							<0.001
Up to 1/4	382	37.9	53	13.9	329	86.1	
>1/4 to <1/2	340	33.7	106	31.2	234	68.8	
1/2 to <1	179	17.8	93	52.0	86	48.0	
>1	53	5.3	43	81.1	10	18.9	
Not informed	54	5.4	24	44.4	30	55.6	

Table 1 – Continuation

VARIABLES	TOTAL (N=1008)		FS		FI		p
	n	%	N	%	n	%	
Beneficiary of the Bolsa Família							<0.001
Yes	526	52.2	108	20.5	418	79.5	
No	482	47.8	211	43.8	271	56.2	
Number of residents in the household							<0.001
>4	366	36.3	78	21.3	288	78.7	
≤4	642	63.7	241	37.5	401	62.5	
Occupancy scheme of the household							<0.001
Ceded/Invaded/Other	110	10.9	24	21.8	86	78.2	
Rented	238	23.6	50	21.0	188	79.0	
Own	660	65.5	245	37.1	415	62.9	
Social class							<0.001
D/E	401	39.8	70	17.5	331	82.5	
C2	381	37.8	125	32.8	256	67.2	
B/C1	226	22.4	124	54.9	102	45.1	
Drinking water treatment							<0.001
Boiled/Filtered/Strained	190	18.9	48	25.3	142	74.7	
Untreated	363	36.0	88	24.2	275	75.8	
Mineral	455	45.1	183	40,2	272	59.8	

[a] MW: minimum wage (2015: R$788.00; 2016: R$880.00).

Table 2 shows that most households purchased food for consumption (83.1%), 50.4% had the supermarket as the main place of purchase and, among the beneficiaries of the BFP, most reported buying only food or food and other items for subsistence of the family with the money received from this program. As for the opinion on food from the receipt of the BFP benefit, most of those enrolled in the program reported having improved, and 53% of respondents considered the family diet good or very good. When asked about the food that was missing to improve the family's diet, 58.3% mentioned *fresh foods*, such as fruits, vegetables and meats, which also suggests insecurity in the nutritional dimension (**Table 2**).

Table 2 shows that FI is significantly higher among individuals who reported buying and producing food, among those who used to buy most of the family's food at the fair or free market, and among those who reported buying food and other items with the benefit of the BFP. In addition, the FI was significantly higher in those who thought the family diet was poor or very poor and in those who reported that they lacked all the food to improve the family diet.

When performing the multivariate analysis, the variables head of household's education, *per capita* family income, participation in the BFP, number of residents, household occupation regime and social class remained significantly associated with FI (**Table 3**). As for the variables related to diet, the place of purchase of most foods and the opinion on diet from the BFP did not remain with a statistically significant association.

Table 2 – Food security and insecurity (FS/FI) according to practices and opinions on the feeding of adults in the state of Pernambuco, Brazil, 2015-2016

VARIABLES	TOTAL (N=1008)		FS		FI		p
	n	%	n	%	n	%	
Manner of purchasing food for consumption							<0.001
Purchases	838	83.1	292	34.8	546	65.2	
Receives donations (in addition to buying and/or producing)	106	10.5	18	17.0	88	83.0	
Buys and produces	64	6.3	9	14.1	55	85.9	
Place of purchase of most of the family's food							<0.001
Fair/Free market	24	2.4	4	16.7	20	83.3	
Market/Grocery Store/Small Commerce	476	47.2	119	25.0	357	75.0	
Supermarket	508	50.4	193	38.0	315	62.0	
Spending in the last month with the benefit of the BFP							<0.001
Bought food and other items	195	19.3	25	12.8	170	87.2	
Bought only food	212	21.0	34	16.0	178	84.0	
Did not buy food	116	11.5	48	41.4	68	58.6	
Not informed/Not enrolled in BFP	485	49.1	212	43.7	273	56.3	
Opinion on diet from the receipt of the BFP							0.119
Highly improved	53	5.3	7	13.2	46	86.8	
Improved	369	36.6	73	19.8	296	80.2	
Unchanged	101	10,0	27	26.7	74	73.3	
Not informed/Not enrolled in BFP	485	48.1	212	43.7	273	56.3	
Opinion on the quality of family diet							<0.001
Fair	447	44.3	92	20.6	355	79.4	
Poor/Very Poor	27	2.7	2	7.4	25	92.6	
Good/Very Good	534	53.0	225	42.1	309	57.9	
Foods that are missing to improve the family's diet							<0.001
Minimally processed	588	58.3	118	20.1	470	79.9	
Ultra-processed	12	1.2	2	16.7	10	83.3	
All	52	5.2	7	13.5	45	86.5	
None	356	35.2	192	53.9	164	46.1	

Table 3 – Poisson regression of socioeconomic, demographic and food factors associated with food insecurity in households in the state of Pernambuco, Brazil, 2015-2016

VARIABLES	CRUDE PR		ADJUSTED PR		
	PR	CI95%	PR	CI95%	*p*
Block 1					
Schooling of the head of the family					*0.002*
<4 years	1.32	1.16-1.51	1.24	1.09-1.40	
4 to 7 years	1.24	1.07-1.43	1.12	0.98-1.28	
8 to 10 years	1.16	0.98-1.38	1.08	0.92-1.26	
≥11 years	1.00		1.00		
Per capita income (MW) *					*<0.001*
Not informed	2.94	1.60-5.40	2.76	1.51-5.04	
Up to 1/4	4.56	2.61-7.99	3.90	2.23-6.84	
>1 1/4 to <1 1/2	3.65	2.08-6.40	3.30	1.89-5.78	
1/2 to <1 1	2.55	1.43-4.54	2.42	1.37-4.30	
>1	1.00		1.00		
Beneficiary of Bolsa Família					*0.027*
Yes	1.41	1.29-1.55	1.11	1.01-1.22	
No	1.00		1.00		
Block 2[a]					
Number of residents in the household					*0.003*
> 4	1.26	1.16-1.36	1.12	1.04-1.21	
≤4	1.00		1.00		
Occupancy scheme of the household					*<0.001*
Ceded/Invaded/Other	1.24	1.11-1.39	1.10	0.99-1.22	
Rented	1.26	1.15-1.37	1.20	1.10-1.31	
Own	1.00		1.00		
Social class					*<0.001*
D/E	1.83	1.57-2.13	1.40	1.18-1.65	
C2	1.49	1.27-1.75	1.23	1.05-1.44	
B/C1	1.00		1.00		

Table 3 – Continuation

VARIABLES	CRUDE PR		ADJUSTED PR		
	PR	CI95%	PR	CI95%	*p*
Block 3[b]					
Manner of purchasing food for consumption					*<0.001*
Purchases	0.76	0.68-0.85	0.80	0.71-0.89	
Receives donations (in addition to buying and/ or producing)	0.97	0.85 — 1.10	0.88	0.77-1.00	
Buys and produces	1.00		1.00		
Spending in the last month with the benefit of the BFP					*0.001*
Not informed/Not enrolled in BFP	0.96	0.81-1.14	1.19	0.70-2.02	
Bought food and other items	1.49	1.26-1.75	1.31	1.13-1.51	
Bought only food	1.43	1.22-1.69	1.25	1.08-1.44	
Did not buy food	1.00		1.00		
Opinion on the quality of family diet					*0.005*
Fair	1.37	1.26-1.50	1.14	1.05-1.23	
Poor/Very Poor	1.60	1.41-1.82	1.13	0.97-1.32	
Good/Very Good	1.00		1.00		
Foods that are missing to improve the family's diet					*<0.001*
Minimally processed	1.73	1.54-1.95	1.49	1.33-1.67	
Ultra-processed	1.81	1.37-2.39	1.54	1.19-1.97	
All	1.88	1.61-2.19	1.45	1.25-1.68	
None	1.00		1.00		

* MW: minimum wage (2015: R$788.00; 2016: R$880.00)

[a] *Block 2*: adjusted by the variables of *Block 1* and by living area, age of the head of the family and drinking water treatment.

[b] *Block 3*: adjusted by the variables of *Blocks 1* and *2* and by the variables place of purchase of most of the family's food and opinion on family diet from the receipt of the BFP.

Discussion

As a result of a violation of Dhana (Direito Humano à Alimentação e Nutrição Adequadas), FI is originated in social inequalities arising from a model of production and distribution that aims at financial capital above human aspects, i.e., despite constitutional law, food has been increasingly viewed from the perspective of merchandise, in which its existence as a right becomes of secondary importance to obtaining profit (Esteve, 2017).

Hunger has historical roots in economic and social systems, and the globalized increase in food production does not solve this problem, since it involves factors related to political economy and the distribution of power and wealth, as stated by Milton Santos (2003).

The Brazilian scenario is even more worrying when considering the social inequalities present mainly in the North and Northeast regions, which lead them to have the highest rates of FI (57% and 50.3%, respectively), including severe FI,

whose proportion was 10.2% in the North region and 7.1% in the Northeast region (IBGE, 2020). The results of this study showed a higher prevalence than that observed in the last POF for the state of Pernambuco and obtained in an investigation carried out in 2011, which found 61.8% of FI (27.5% of moderate FI and 9.6% of severe FI) (UFPE, 2011). High prevalences such as this study's were also found in research carried out in municipalities in the Northeast and North regions, such as the investigation of FI in BFP beneficiary families living in Vitória da Conquista (BA), whose percentage was 73.4% (Suzart et al., 2018); and in urban households in 22 municipalities in the state of Tocantins, which observed 63.4% of FI (Schott et al., 2020).

At the regional level, between 2004 and 2013 the Northeast obtained an improvement in the situation of FNS due to greater investments in combating hunger and promoting access to food, placed as a priority on the public agenda during the Lula government (DELGADO; ZIMMERMANN, 2022). However, the increase in the prevalence of FI demonstrates a setback due to the continuing dismantling of public policies aimed at combating inequalities and social inequities (Santarelli et al., 2017; Alpino et al., 2020; Galindo et al., 2021). In the midst of the pandemic situation, regional inequality regarding full access to food was verified, since in the North and Northeast regions the highest percentages of severe FI and the highest intensity of increase in the prevalence of moderate and severe FI are found, when analyzing the national surveys of 2018, 2020 and 2021/22 (PENSSAN Network, 2022).

The capacity to generate change in the face of a given political-social reality is directly associated with the education of a population. Among the factors related to FI, it is known that there is a higher risk in individuals with a lower level of education (IBGE, 2020). Several studies seek to investigate this relationship and, like this study, also found a higher prevalence of FI in households whose reference person had a lower level of education (Sperandio; Priore, 2015; Suzart et al., 2018; Pacheco et al., 2018; Schott et al., 2020). It is common knowledge that education has an essential role in the professional development of the individual, in the insertion in the formal labor market and, consequently, in the generation of income (Santos et al., 2018). There was a higher probability of FI in households whose level of education of the head of the family was less than four years of study, which may be related to the greater financial vulnerability resulting from this situation, which directly compromises access to food.

In this perspective, associations between FI and lower income and social class levels are also observed, corroborating poverty as a determining factor. The lower the income of a family, the greater the proportion of food expenditure, therefore, the greater the risk of FI (IBGE, 2014; IBGE, 2020). In this research, as well as in the Brazilian context at both national and regional levels, it was observed that the highest frequencies of moderate and severe FI occur in individuals who receive up to 1/4 of the minimum wage and in those who have no income (IBGE, 2014; Godoy et al., 2017; Schott et al., 2020). Cabral et al. (2014), in a cohort conducted in Paraíba, identified that when families overcome the poverty condition, there is also a significant reduction in moderate and severe FI, confirming the causal relationship between increased income and improvement in the FNS situation.

Given the economic situation that demonstrates social vulnerability, many of these families are beneficiaries of the BFP, an important strategy for poverty reduction in the country, which targets families in situations of poverty and extreme poverty. In agreement with the finding, research shows a higher prevalence of FI among beneficiary families, which suggests a situation of vulnerability and social inequity with repercussions on regular and permanent access to food (Pacheco et al., 2018; Schott et al., 2020). It should be noted that BFP had a great contribution to improving access to food, allowing beneficiary families to be more likely to leave the FI situation (Cabral et al., 2014; Suzart et al., 2018).

From the perspective of access to food from the benefit of the BFP, it was verified in this study that those who reported using the money received only to buy food or food and other items were at greater risk for FI, demonstrating, then, that the resource was used as a priority for family subsistence, making it essential to maintain regular access to food in order to avoid the most serious situation,

which is hunger. When evaluating the impact of BFP on food consumption, Sperandio et al. (2017) observed that in the Northeast region there was an increase in the consumption of *fresh food* by the beneficiaries, so that they presented an average increase of 125 kilocalories *per capita*/day regarding the non-recipients.

In addition to the quantitative issue of access, Cabral et al. (2014) emphasize that it is important to promote, by public policies, the realization of actions to stimulate the purchase of healthy foods, i.e., it is one must also think about the acquisition of food in the qualitative aspect to reach other dimensions of FNS. Despite the findings of social improvements resulting from the BFP, in recent years there have been large cuts in the number of beneficiaries, culminating in the recent extinction of the BFP and its replacement by the Auxílio Brasil, a strategy permeated with doubts and uncertainties about its operation, which leads to the risk of a substantial increase in individuals in extreme poverty and consequently in FI, going against several achievements made since the implementation of the BFP.

In addition to the factors mentioned, another exposure that represents the social vulnerability of the populations is the housing condition. A higher prevalence of FI was observed in households with a higher number of residents, which agrees with what has been observed in other studies that demonstrate intrafamily agglomeration as frequently associated with the FI situation (Sperandio; Priore, 2015; Santos et al., 2018). This association happens since all residents of the household need adequate food on a regular basis, regardless of the socioeconomic context and, consequently, the more people in the household, the greater the proportion of family income destined for food (Sperandio; Priore, 2015; Santos et al., 2018).

The household occupation regime was also associated, because those who reported living on a rental basis had a higher prevalence of FI. As already observed, the lower the family income, the higher the spending on food, since it is an indispensable need for survival. Therefore, those families that have part of their income committed to the payment of rent have, consequently, less free resources for food acquisition (IBGE, 2014; IBGE, 2020). These families have a higher cost of living, which makes it difficult

to break the intergenerational cycle of poverty and increases the probability of experiencing FI.

It is noteworthy that in the Brazilian context, since 2009, there has been greater investment in the housing issue through the Minha Casa Minha Vida program, a strategy of the Federal Government that aims to combat the housing *deficit* in the country, providing the acquisition of its own property through better financing conditions according to the family income bracket. Therefore, it is considered that somehow this program could contribute to the promotion of FNS, as it is part of the set of structural actions that need to be covered in the fight against hunger and in the reduction of poverty and inequalities, since Dhana (Direito Humano à Alimentação e Nutrição Adequadas) depends on the realization of other rights, such as housing and improvement of living conditions (Valente, 2003; Santos et al., 2018). In contrast, the current Brazilian government – which extinguished the Minha Casa Minha Vida program, replacing it with the Casa Verde e Amarela program – dismantles housing policies as it drastically reduces the budget allocated to this sector.

As for the form of food acquisition, it was seen that those who reported acquiring them only through purchase were more protected from FI, which may be related to a greater purchasing power of part of this population. In addition, when comparing this group with those who, in addition to buying, produce food, it is believed that the latter probably reside in the countryside, a location that presented the highest percentage of FI. It is noteworthy that this result shows only the issue of regular and permanent access to food, not associated with the quality of food purchased, an aspect that can be discussed with analysis of food consumption.

In the perception aspect, those individuals who did not consider the family diet good or very good were at higher risk of FI, which is coherent, since the situation of insecurity is a reflection of inadequate and irregular food consumption in the quantitative and qualitative aspect (Brasil, 2006). When investigating which foods were missing to improve the family's diet, it was found that most mentioned minimally processed foods, a fact that evidences insecurity not only in the dimension of access to food, but also in the nutritional aspect of it.

In addition, the probability of FI was higher in those who claimed to lack products in the ultra-processed category to improve food at home.[1] These products have wide media dissemination and *marketing* strategy in order to encourage consumption, which makes it important to highlight that the process of choosing food, in most cases, is not due to nutritional content, but due to the social influences of daily life, which may be in family relationships, in the workplace, at school and in other spaces of coexistence of the individual (Lima; Ferreira Neto; Farias, 2015). It is essential to reflect on the sociocultural dimension of diet, since food, as a representative of everyday reality, expresses social relations and differences (Silva, Freitas, Sousa, 2014).

As pointed out by Contreras and Gracia (2011), food choices are not only economic, since the act of eating is a social and cultural phenomenon and it is not just biological activity, because food is more than a set of nutrients chosen under exclusively dietary rationality. It is important to discuss this topic as a sociocultural construction, related to pleasure, commensality and habit, in order to overcome the Cartesian thought that separates the individual from society (Silva, Freitas, Sousa, 2014).

This research has limitations inherent to cross-sectional studies, as they do not allow the inference of the cause and effect relationship between the variables, since they are carried out in a single moment and that create the possibility of existence of reverse causality. In addition, as for the FNS study, it is suggested to carry out investigations of other dimensions, such as those related to food production, forms of distribution and food environment, in view of the breadth and complexity of the theme.

Final considerations

From this study, it was possible to verify the association between FI and social inequalities, since those with a worse socioeconomic and demographic situation had difficulty in accessing food. Families in classes D/E, with an income of up to 1/4 of the minimum wage and with a head of the family with low education level were more likely to experience the situation of insecurity. In this context, it was also verified that housing conditions are related to insecurity, since the risk of FI was higher in families with rented homes and who had more than four residents.

When investigating the subjects' opinions about food, higher probabilities of FI were observed in those who did not consider the family diet very good or good – which suggests restriction on access to food –, as well as in those who reported lack of ultra-processed products to improve the family diet, an aspect that promotes reflection on the socio-cultural dimension of food.

It is important to point out the association found between FI and BFP: the highest prevalence of insecurity was observed in the beneficiaries of the program and the risk was higher among those who reported buying only food or food and other items with the resource they received. This result reinforces the relevance of the program as a strategy to promote access to food, considering the poverty and extreme poverty of the beneficiary population.

Finally, it is emphasized that the State has the duty to respect, protect and guarantee Dhana (Direito Humano à Alimentação e Nutrição Adequadas); however, in recent years it has seen a growing violation of this right and non prioritization of public policies that act to combat inequalities. The omission of the government in the face of scenarios of high prevalence of FI reinforces the debate on hunger as a result of political decisions.

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1 Ultra-processed products are those manufactured by large industries, in processes that involve the addition of many ingredients, such as salt, sugar, oils, fats, food additives and other substances for exclusively industrial use, with the objective of making them durable and with organoleptic characteristics attractive to the consumer (MS, 2014).

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Authors' contributions