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Food and Nutritional Insecurity of *Bolsa Família* Program Beneficiaries

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Abstract

This study aims to evaluate the food and nutritional insecurity of families benefiting from the *Bolsa Família* Program residing in the western health district of the city of Ribeirão Preto, São Paulo. This is a cross-sectional study of a population subset carried out from January to October 2018 through interviews with 246 participants of the *Bolsa Família* Program. Socioeconomic and demographic variables and food and nutritional insecurity data were collected using the Brazilian Food Insecurity Scale. Food and nutritional insecurity were at 94.3%, of which 27.6% had a moderate level, and 25.6% had a severe level. There was a predominance of female heads of households (97.6%), mixed-race ethnicity (54.9%), a low education level (53.3%), and unemployed individuals (64.6%). The highest frequency of beneficiary families belonged to the intermediate social stratum (54%), resided in their own homes (62.6%), and had children under seven years old (57.7%). Regarding the families, 60.4% had received the benefit for more than 48 months, 74.3% received an amount of R$ 200.00 or less, and 70.7% used most of the funds to purchase food. The study highlighted a high vulnerability among the families, indicating a situation of food deprivation and/or hunger experienced by the families.

Keywords: Food Safety. Government Programs. Social Vulnerability.

INTRODUCTION

The *Bolsa Família* Program (BFP) was created in 2003 through provisional measure number 132, which was later converted into law number 10.836[1], with the aim of streamlining the management and implementation of pre-existing social income transfer programs, such as food allowance, school allowance, gas assistance, and food card[2,3,4]. This program aims to reduce poverty, hunger and foster social inclusion for families affected by the social inequality that plagues the country[5], as well as promote Food and Nutritional Security (FNS) and access to fundamental social rights (health, nutrition, education, and social assistance) and break the intergenerational cycle of poverty[6,7].

FNS (Food and Nutritional Security) refers to the right of everyone to regular and permanent access to quality and sufficient food that

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does not hinder access to other essential needs. This access is based on dietary practices that promote health, respect cultural diversity, and are environmentally, economically, and socially sustainable[8].

The violation of the human right to adequate food following the principles of FNS leads to Food and Nutritional Insecurity (FNI)[9]. In FNI, there is concern and/or distress due to the uncertainty of food availability in day-to-day life, living with hunger, or consuming a monotonous diet with low nutritional quality that is insufficient to meet the individual's basic needs[9,10].

FNI is a complex and multidimensional phenomenon of multi-causal determination[11] that grows continuously, unfolding at different levels, while economic conditions worsen[10]. Its consequences are directly related to the lack of quality and quantity of food, especially for the most vulnerable groups[9], and can contribute to infant mortality, low birth weight, impaired physical and mental development, maternal[12] mortality, decreased school performance, and dropout[13].

Bearing in mind that low family income is a significant risk factor for FNI, surveys carried out in different regions of Brazil found a higher prevalence of FNI among the poorest populations, and it was verified that when carried out with BFP beneficiaries, the prevalence is even greater[5,11,14,15,16].

However, when comparing the objectives set by the BFP and the studies conducted over the years since its implementation, which highlight the levels of moderate and severe FNI, characterized by food restriction and/or hunger experienced by individuals, it can be suggested that there is a gap between the program's intended goals and the reality of its beneficiaries.

Considering that FNI can lead to numerous consequences and that the main repercussions related to this condition are evident in individuals facing social vulnerability, it is essential to identify its magnitude and the socio-economic and demographic factors involved. This identification is crucial to guide public policies.

It should be noted that, up to the present moment, no study has assessed the FNI situation and the socio-economic and demographic status of families benefiting from the BFP in the city of Ribeirão Preto, São Paulo. Hence, this research aims to study the FNS condition of families residing in the municipality of Ribeirão Preto, São Paulo, benefiting from the BFP.

METHOD

This is a cross-sectional study of a population subset of families benefiting from the BFP residing in the western health district of the municipality of Ribeirão Preto, which is located in the northeast of the state of São Paulo, 330 km away from the capital. The estimated population for 2021 is 720,116 inhabitants[17].

In the municipality of Ribeirão Preto, healthcare is structured into five regions known as health districts, with delineated areas and populations based on geographic, economic, and social aspects. These districts combine primary healthcare services, urgent and emergency care, specialized and hospital care, and other social facilities.

The studied health district has approximately 151,200 inhabitants and twenty primary healthcare units (PHUs)[18]. According to data from the Municipal Health Department of Ribeirão Preto, during the last implementation of the BFP (first semester of 2017), 1,985 be-

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neficiary families were monitored in this district, distributed across eighteen PHUs.

For the sample calculation, the proportion of 22.6% of food insecurity in the Brazilian population[19] was considered with a precision of 5%, resulting in 244 families. An additional 10% was added to this result to account for potential losses, totaling 269 families, corresponding to 10.5% of the beneficiary population in the western health district during the calculation period.

Participants were selected through simple random sampling based on a list of all active beneficiaries linked to the western health district. By consulting the Hygiaweb System (an online health management system used in the municipality), the families' telephone and residential contact information was obtained. After this step, the families were grouped according to their respective Primary Healthcare Units (PHUs), and the managers of these units were contacted for the research presentation and the fieldwork initiation.

Data collection took place from January to October 2018 and was conducted by a researcher. Participating families associated with the PHUs operating under the Family Health Strategy model were approached through home visits conducted alongside community health agents from the unit. Interviews were conducted in the households themselves. For families associated with Basic Health Units following the traditional model, which did not have a community health agent program, data was collected through phone calls or at the health unit, where a room was provided for the interviews.

At the end of the study, 575 families were selected, of which successful contact and participation of 246 families were achieved. This was due to difficulties encountered during the data collection process (outdated registration information, research conducted during business hours, inability to find the head of household at home due to work commitments, suspended benefits during the research period, traveling during the research period, and non-appearance at the health unit on the scheduled day and time), leading to non-participation.

A structured questionnaire previously tested in a pilot study was used for data collection. The questionnaire was administered to the benefit recipient through face-to-face household interviews. Based on the available socio-economic and demographic data, the investigation of the following independent variables for sample categorization was possible: gender (female or male); age group (19 to 29); race/ethnicity (white/yellow, mixed race, black); education level (illiterate to completed elementary school, middle school to completed high school); marital status (with partner, without partner); occupation (active, inactive); Other benefits (food basket, milk, financial resources); family income (≤ R$ 937.00 (US$ 193); R$ 938.00 (US$ 193) to R$ 1,874.00 (US$ 386); ≥ R$ 1,875.00 (≥ US$ 386); economic classification (according to the Brazil Economic Classification Criteria – CCEB, developed by the Brazilian Association of Research Companies – ABEP2021, in categories A/B, C, and D/E)[20]; expenditure on food (≤ R$ 300.00 - US$ 62; > R$ 300.00 - US$ 62 to ≤ R$ 400.00 - US$ 83; > R$ 400.00 - US$ 83; considering that 1 US Dollar equals R$ 4.86 Brazilian Real); household characterization (owned house, rented house, other); type of housing (finished masonry, unfinished masonry, wood/cardboard); number of rooms (up to 3, 4 or more); water supply, garbage collection, and water filter (yes, no); how they learned about the BFP (friends/family, TV/radio/information sources/internet, school/social worker, health unit); length of receiving the benefit (06 to 48 months, 49 months or more); use of the benefit (food, school supplies, clothing, others).

The Brazilian Food Insecurity Scale (BFIS)

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was used to characterize the household food insecurity situation. BFIS is a psychometric scale that assesses a population's perception and experience of hunger. It was constructed based on the American scale developed by Cornell University, which initially consisted of 18 items. Its content was simplified to adapt to the Brazilian population's reality, and redundant items were excluded without altering its internal consistency. The scale now contains 14 questions about the household's food situation in the last 90 days. The validation study was conducted in four Brazilian cities from different states, encompassing both urban and rural populations[21].

The collected data were reviewed, coded, and entered into a database using the Excel® program. Data entry was performed in duplicate to ensure data consistency.

Initially, the data were categorized according to the population's socio-economic, demographic, and health characteristics using relative and absolute frequencies. For this study, the dependent variable (food insecurity) was categorized into two groups: Group 1 – families experiencing mild food insecurity, and Group 2 – formed by families facing moderate food insecurity and those with severe food insecurity conditions.

To estimate prevalence ratios (PR) for Groups 1 and 2 based on the variables of interest, simple and multiple log-binomial regression models were utilized[22]. SAS 9.2 software was used for the analyses, and a significance level of 5% was adopted for comparisons.

The research was presented and approved by the Municipal Health Department of Ribeirão Preto/SP and by the Research Ethics Committee (REC) of the Dr. Joel Domingos Machado School Health Center at the Ribeirão Preto Medical School (Opinion No. 2261509), following the recommendations of the National Commission for Ethics in Research (CONEP), under Resolution No. 466/2012 of the National Health Council. All participants included in the study were initially informed and invited to participate autonomously and signed the Informed Consent Form. The collected data, processing, and storage followed the regulations implemented by the general law of personal data protection (Law No. 13.853/2019).

RESULTS

It was observed that the majority (94.3%) of families were in a situation of Food and Nutritional Insecurity (FNS), with mild, moderate, and severe degrees, corresponding to 41.1%, 27.6%, and 25.6%, respectively. Considering that moderate and severe FNS levels relate to food scarcity, it is highlighted that 53.2% of households were in this situation.

Benefit recipients were predominantly female, aged between 30 and 59, of mixed race ethnicity, and had an education level from illiterate to completed elementary school. Additionally, the majority had a partner and were unemployed. (Table 1)

The majority of households were owner-occupied. Regarding the number of residents per household, most had up to four members and had children up to seven years old. Regarding socio-economic conditions, over 50% were classified in classes B2, C1, and C2. A significant portion of the recipients reported having a family income equal to or less than two minimum wages (equivalent to R$ 1,874.00 Brazilian Real or 386 American Dollars) and reported monthly food expenses equal to or less than R$ 400.00 (US$ 83). (Table 2).

Regarding the benefit, there was a prevalence of families who learned about the BFP

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through friends/family (41%), who had been receiving the benefit for more than four years (60.4%), with a monthly amount of R$ 200.00 (US$ 41) or less (73.2%). This resource was primarily used for purchasing food (71.1%).

The enrollment and receipt of the BFP do not prevent beneficiary families from simultaneously receiving other benefits, whether they are related to food or financial resources. However, the latter must be associated with family income and distributed among the members in a way that the per capita income does not exceed the criteria defined by the program. In this study, 26.7% of families reported receiving another benefit concurrently with BF. It is worth noting that in some cases, families had only one of these benefits, while in others, they had both. Consequently, it was determined that 35.5% received a basic food basket (provided by family members and social workers), 61.3% received milk (government); and 17.7% received financial resources (child support for children of separated parents).

In Table 3, the prevalence of Food and Nutritional Insecurity (FNI) among the categories of independent variables is observed, along with crude prevalence ratios (95% CI) and adjusted prevalence ratios (95% CI) between the outcome and the independent variables. It can be noted that the differences were not statistically significant ($p < 0.05$).

Table 1 – Characteristics of BFP beneficiaries residing in the western health district of Ribeirão Preto. Ribeirão Preto, Sao Paulo, 2018. (n=246)

Variables	n	%
Sex		
Female	240	97.6
Male	06	2.4
Age (years)		
19 to 29	70	28.4
30 to 59	165	67.1
≥ 60	11	4.5
Color/Race		
White/Yellow	63	25.6
Mixed	135	54.9
Black	48	19.5
Education		
Illiterate to Complete Elementary school	131	53.3
Complete Middle School to Highschool	115	46.7
Marital status		
Has a partner	128	52.0
Without a partner	118	48.0
Occupation		
Active	87	35.4
Not Active	159	64.6

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Table 2 - Demographic and socioeconomic characterization of beneficiary families of the BFP residing in the western health district of Ribeirão Preto. Ribeirão Preto, São Paulo, 2018. (n=246)

Variables	n	%
Number of residents		
Up to 4	151	61.4
Above 4	95	38.6
Children up to 7 years old		
Yes	142	57.7
ABEP*		
B2/C1/C2	133	54.0
D/E	113	46.0
Family income (R$)**		
≤ 937.00	115	47.0
938.00 to 1874.00	118	48.0
≥1985.00	11	5.0
Food Expenses (R$)		
Up to 300.00	60	25.0
301.00 to 400.00	89	37.0
≥ 400.00	92	38
Type of housing		
Own house/apartment	154	62.6
Rented house/apartment	31	12.6
Other	61	24.8
Type of housing construction		
Finished masonry	230	93.5
Unfinished masonry	14	5.7
Wood	02	0.8
Number of rooms		
1 - 3	66	26.8
≥ 4	180	73.2
Water supply		
Yes	246	100
Water filter		
Yes	203	82.5
No	43	17.5
Garbage collection		
Yes	245	99.6
No	01	0.4

*Brazilian Association of Research Companies[20].
**Brazilian real

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Table 3 - Prevalence and prevalence ratio (PR) crude and adjusted by log-binomial regression of food and nutrition insecurity, according to socioeconomic and demographic characteristics and information related to beneficiary families of the BFP residing in the western health district of the municipality of Ribeirão Preto. Ribeirão Preto, São Paulo, 2018.

Variables	Food insecurity (n=131)	Crude PR (95% CI*)	p-value	Adjusted PR (95% CI)	p-value
Number of residents					
1 - 4	83 (54.97%)	1.09 (0.85 – 1.39)	0.50	1.16 (0.87 – 1.55)	0.30
≥ 5	48 (50.5%)				
Children up to 7 years old					
No	53 (51.0%)	0.93 (0.73 – 1.18)	0.54	0.82 (0.64 – 1.06)	0.13
Yes	78 (54.9%)				
Beneficiary's education level					
Illiterate to complete elementary school	75 (57.3%)	1.18 (0.93 – 1.49)	0.18	1.11 (0.86 – 1.42)	0.42
Complete Middle school/ high school	56 (48.7%)				
Titular marital status					
Has a partner	67 (52.3%)	0.97 (0.76 – 1.22)	0.77	0.96 (0.77 – 1.19)	0.70
Without a partner	64 (54.2%)				
Food expenses (BRL)					
Up to 300.00	30 (50.0%)	0.87 (0.64 – 1.19)	0.39	0.9 (0.65 – 1.25)	0.53
301.00 to 400.00	51 (57.3%)	0.96 (0.70 – 1.32)	0.79	0.98 (0.7 – 1.36)	0.89
≥ 401.00	48 (52.2%)	1.10 (0.84 – 1.43)	0.49	1.08 (0.84 – 1.41)	0.54
Economic class					
B2/C1/C2	68 (51.1%)	0.92 (0.73 – 1.16)	0.47	0.91 (0.71 – 1.16)	0.45
D/E	63 (55.7%)				
Number of residential rooms					
1 - 3	32 (48.5%)	0.88 (0.67 – 1.17)	0.38	0.92 (0.67 – 1.27)	0.62
≥ 4	99 (55.0%)				
Has a water filter					
No	112 (55.2%)	1.25 (0.87 – 1.79)	0.22	1.18 (0.85 – 1.63)	0.31
Yes	19 (44.2%)				
Home					
Rented residence	45 (48.9%)	0.88 (0.68-1.13)	0.30	0.85 (0,63-1.13)	0.26
Own residence	86 (55.8%)				
Benefit time (months)					
6 - 48	50 (51.6%)	0.95 (0.75 – 1.22)	0.70	1.04 (0.81 – 1.33)	0.79
≥ 49	80 (54.1%)				
39.00 to 100.00	40 (51.95%)	1.07 (0.80 - 1.43)	0.65	1.12 (0.83 - 1.5)	0.47
101.00 to 200.00	51 (48.57%)	0.84 (0.63 - 1.12)	0.23	0.97 (0.69 - 1.36)	0.86
≥ 201.00	39 (61.9%)	0.78 (0.59 - 1.03)	0.08	0.87 (0.66 - 1.15)	0.32
Another benefit					
No	99 (55%)	1.13 (0.86 – 1,50)	0.38	1.2 (0.93 -1.56)	0.15
Yes	32 (48.5%)				

*95% CI: 95% confidence interval.

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DISCUSSION

Food and Nutritional Insecurity (FNI) occurs when an individual lacks regular and consistent access to food[10]. This condition manifests at different levels: mild degree is characterized by decreased food quality and/or uncertainty about access to food in the near future. Moderate level refers to changes in usual eating patterns and limitations in the amount of food/meals consumed by adults simultaneously. The severe degree involves a complete deprivation of food consumption and hunger experienced by all family members, including children[10,23].

The prevalence of FNI found in this study (94.3%) is higher compared to the most recent national data, where the Family Budget Survey (FBS) indicated 36.7% of FNI in private households. When analyzed by major regions, the Southeast had a prevalence of 31.2%[24]. In 2022, the 2nd National Survey on Food Insecurity in the Context of the Covid-19 Pandemic[23] revealed that the FNI situation in the country worsened, affecting over half (58.7%) of the Brazilian population.

The disparity in FNI found is likely explained by the fact that the aforementioned national surveys analyzed the population in general without explicitly examining BFP beneficiaries separately. It's known that those in poverty are predisposed to FNI[25,26]. In this regard, the obtained results align with estimates from the first and the only population-based survey conducted solely with BFP beneficiaries from different country regions. In that study, 83.1% of the families exhibited some degree of FNI[14].

Other studies conducted with BFP beneficiaries in different Brazilian municipalities have also reported a high prevalence of FNI, though lower than this study, ranging from 72.8% to 89.1%[27,28,29]. On the other hand, in the Southeast region, higher results were observed in Araraquara, SP (95%) and Montes Claros, MG (100%)[30,31].

Regarding the moderate/severe levels (53.3%), the prevalence found in this current research is higher than the most recent prevalence observed in the country (30.7%)[23], similar to the one reported in the study "*Repercussions of the BFP on the Food and Nutritional Security of Beneficiary Families*" (54.8%)[14], and close to the results seen in a study conducted with BFP beneficiary families served in three Family Health Units (41.6%)[29].

The sample in this study was mainly composed of females, a similar result to other studies[6,14,32], which can be justified by women's preference for benefit ownership[14].

Another significant condition observed in this study was the low level of education among the studied population. There is strong evidence that families where mothers have less than eight years of education, are more likely to experience FNI[23]. The lack of access to adequate information can negatively impact the quality of their diet[33]. Furthermore, these individuals face challenges in entering the formal job market, leading to access only to low-paying jobs[26,34]. This situation is aggravated by the historical condition where women have lower incomes than men in similar roles[34].

Regarding the economic classification according to ABEP criteria[20], the majority of families fell into intermediate levels (B2, C1, C2), which caught attention since, being a population in a vulnerable situation, it was expected that the predominant portion would be classified in lower classes. To clarify this finding, a cohort study that assessed the impact of the BFP in overcoming Food and Nutritional Insecurity by analyzing the relationship between income and receiving the BFP benefit concluded that the income increase among beneficiaries could contribute to improving the economic profile[4].

However, it was observed that Food and Nutritional Insecurity (FNI) affects individu-

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als generally without being specifically associated with a particular variable. This observation remains relevant and consistent. It is essential to highlight that the quality of the families' diet was not assessed in the current analysis. Since the BFIS scale is focused on measuring FNI, it does not capture aspects related to food quality. The instrument addresses questions concerning economic and physical access to food, making it incapable of evaluating whether this access guarantees nutritionally appropriate and healthy meals[35]. The conceptual framework that underpins the BFIS is more connected to the lack of food at an individual/household level and less to overall Food and Nutritional Security (FNS)[36].

Considering the breadth of the concept of FNS proposed by the Organic Law on Food and Nutritional Security (known as *LOSAN* in Portuguese), it can be said that this condition, identified by the BFIS in a minority of the studied families, reflects only access to food in terms of quantity. This is because the concept of FNS goes beyond the biological and quantitative aspects, embracing the idea of food quality free from biological, genetic, physical, and chemical contaminants in accordance with the culture of the region where they are produced[37].

This study has the limitation of information bias. Since it involves subjects related to income and access to food, participants may have withheld information.

Another potential limitation concerns the use of BFIS, as its classification of food security does not encompass the definition of Food and Nutritional Security (FNS) proposed by the LOSAN (Law 11.346/2006)[8].

CONCLUSION

Based on the results obtained in this study, it can be concluded that the majority of studied BFP beneficiaries were in a state of Food and Nutritional Insecurity (FNI), with a particular emphasis on the moderate and severe levels, which combined accounted for more than half of the individuals. This suggests a situation of food deprivation and/or hunger experienced by families, thus highlighting the high vulnerability of this population. Furthermore, it was evident that FNI affects individuals in general without being specifically associated with a particular variable, making it relevant and consistent. In this context, intervention should be approached in a universal manner.

In light of this, the fundamental role of primary health care stands out, whose purpose is to promote and protect the health, and prevent illnesses, both on an individual and collective level. Additionally, the inclusion of a qualified nutritionist is urgently needed, as they will adopt strategies to promote Food and Nutritional Security (FNS) and ensure the human right to adequate nutrition.

In summary, the obtained results underscore the high vulnerability of BFP beneficiaries to FNI, highlighting a situation of food deprivation and/or hunger experienced by families. These findings reinforce the accurate targeting of the BFP in terms of beneficiary selection, demonstrating its reach to individuals in more socially vulnerable situations. However, it also serves as a warning about the urgent need for new strategies to combat this condition and the numerous consequences it can have on people's lives and health.

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