Prevalence and factors associated with food insecurity in quilombola families from Alagoas, Brazil

Prevalência e fatores associados à Insegurança Alimentar em famílias das comunidades quilombolas de Alagoas, Brasil

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ABSTRACT

Objective

This study aimed identify the prevalence and factors associated with food insecurity in families from the remaining quilombola communities in Alagoas, Brazil.

Methods

This is a cross-sectional study involving families residing in a random sample of 34 out of the 68 quilombola communities in Alagoas. The dependent variable was food insecurity, defined by the Brazilian Food Insecurity Scale, and its association (prevalence ratio - PR and 95% CI) with the independent variables (socioeconomic, demographic, and environmental) was assessed through multivariable analysis (Poisson regression with robust variance adjustment).

Results

A total of 2,485 families were evaluated, of which 67.6% were experiencing food insecurity (32.9% mild, 20.1% moderate, and 14.6% severe). Variables associated with moderate + severe forms were: improper waste disposal other than public collection; households with ≤4 rooms; using inadequate water for consumption; households with >4 residents; with residents <18 years old; low educational level of the head of the family (≤8 years); belonging to the lower economic class (D-E); and being a beneficiary of the Bolsa Família Program.

Conclusion

Food insecurity affects more than two-thirds of quilombola families in Alagoas, constituting an expressive public health problem. In its more severe forms (moderate+severe), it is associated with worse environmental, socioeconomic, and demographic conditions.

Keywords: Black people. Ethnic and racial minorities. Food security. Health vulnerability. Human right to adequate food.

RESUMO

Objetivo

Identificar a prevalência e os fatores associados à insegurança alimentar em famílias das comunidades remanescentes de quilombos de Alagoas, Brasil.

Métodos

Trata-se de um estudo transversal, envolvendo as famílias residentes em amostra aleatória de 34 dentre as 68 comunidades quilombolas alagoanos. A variável dependente foi a insegurança alimentar, definida pela Escala Brasileira de Insegurança Alimentar, e sua associação (razão de prevalência e intervalo de confiança 95%) com as variáveis independentes (socioeconômicas, demográficas e ambientais) foi verificada por análise multivariável, (regressão de Poisson com ajuste robusto da variância).

Resultados

Foram avaliadas 2.485 famílias, das quais 67,6% estavam em insegurança alimentar (32,9% leve, 20,1% moderada e 14,6% grave). As variáveis associadas às formas moderada e grave foram: destinação do lixo diferente de coleta pública; domicílios com ≤4 cômodos; utilização de água inadequada para consumo; domicílios com >4 moradores; com moradores <18 anos; baixa escolaridade do chefe da família (≤8 anos); pertencer à classe econômica inferior (D-E) e; ser usuário do Programa Bolsa Família.

Conclusão

A insegurança alimentar atinge mais de dois terços das famílias quilombolas alagoanas, configurando-se num importante problema de saúde pública. Em suas formas mais intensas (moderada e grave), associa-se a piores condições ambientais, socioeconômicas e demográficas.

Palavras-chave: *População negra. Minorias étnicas e raciais. Segurança alimentar. Vulnerabilidade em saúde. Direito humano à alimentação adequada.*

INTRODUCTION

Until 2014, Brazil stood out on the international stage as a model with successful public policies to combat food insecurity, even leaving the World Hunger Map (developed by the Food and Agriculture Organization [FAO]) due to these policies [1]. However, in 2020, more than half (55.2%) of the Brazilian population was in a situation of Food Insecurity (FI), meaning they did not have full and continuous access to adequate food without compromising other basic needs [2,3]. This prevalence was higher than that found in 2004 (35.2%), demonstrating the magnitude of the setback in promoting the Human Right to Adequate Food in the country due to the economic and political instability that began in 2013 [4-7].

The distribution of FI among the population occurs heterogeneously, impacting more intensely on families subjected to greater social vulnerability, a consequence of the impact caused by the social, economic, and political determinants of FI [2,8,9]. At the national level, this scenario has been confirmed by research that has shown the association of FI with black or brown skin color, poverty, low education, residence in rural areas, and belonging to the North and Northeast regions. It is worth noting that these regions are characterized by lower economic development, scarcity and fragility of public policies, and where the worst levels of access to adequate and healthy food are more prevalent [2,7,10-14].

As a reflection of an intense process of social exclusion, the socio-economic precariousness is particularly severe in the quilombola population, defined as ethnoracial groups, according to self-attribution criteria, with their own historical trajectory, specific territorial relations, with a presumption of black ancestry related to resistance to historical oppression [15-16]. The greater susceptibility of this group to FI was first described in the study known as the Quilombola Nutritional

Call [17]. Subsequent studies confirmed this vulnerability by showing higher FI prevalence compared to the general population, characterizing it as a serious public health issue among quilombola communities [9,18-21].

In the quilombola communities in the North and Northeast regions, racial inequalities add to environmental and sociodemographic disparities, resulting in less access to food and higher FI prevalence compared to families in other regions [19,22]. In Alagoas, one of the Brazilian states with the worst socioeconomic indicators, quilombola communities face even greater vulnerability than the general population of the state [23,24]. Therefore, it is assumed that FI among quilombola communities is of greater magnitude than observed in other population contexts, representing a significant public health issue for these communities. However, no studies were found that characterized FI among quilombolas in Alagoas, making it difficult to plan and evaluate specific local public policies for this population. This study aims to identify the prevalence and factors associated with food insecurity in families from quilombola communities in the state of Alagoas, Brazil.

METHODS

This is a cross-sectional, population-based study derived from a larger project called "Diagnosis of Health and Food and Nutritional Security of families from Quilombola Communities in the state of Alagoas" (Quilombola Research), funded by the *Conselho Nacional de Desenvolvimento Científico e Tecnológico* (CNPq, National Council for Scientific and Technological Development) (processes nº 442063/2014-8 and nº 466718/2014-4) and by the *Fundação de Amparo à Pesquisa do Estado de Alagoas* (FAPEAL, Research Support Foundation of the State of Alagoas) (process nº 60030.000849/2016).

The Quilombola Research Project was approved by the Research Ethics Committee of Universidade Federal de Alagoas (CAAE: 33527214.9.0000.5013). All participants were duly informed about the study's objectives, risks, and benefits, as well as all other information contained in the Informed Consent Form. Only families who agreed to participate by signing the document were investigated.

Population and Sampling

Quilombola communities are characterized by a strong cultural and ethnic identity related to their history of resistance to oppression. The Quilombo Remaining Communities (QRCs) in Alagoas are mainly located in rural areas, and a substantial proportion of their members engage in extractive activities for family subsistence. In summary, quilombolas are exposed to a scenario of social inequalities, poverty, and poor infrastructure conditions [25]. For the sample planning of the Quilombola Research, we considered the family as the unit of analysis and FI (moderate+severe) as the outcome of interest (dependent variable). According to the records of the Land and Agrarian Reform Institute of Alagoas, in 2017 around 6,889 families lived in the state's 68 certified QRCs. Of these, only one was titled, the legal process that officially recognizes their ancestral lands and guarantees quilombolas the legal right to ownership.

Due to the lack of data on FI in the quilombola population in Alagoas, a prevalence of 50% of FI was considered in order to ensure the largest possible sample size and, therefore, sufficient statistical power to investigate all the specific objectives of the research. Thus, for a sampling error of 2.0% and a 95.0% confidence interval, it would be necessary to conduct the research with a sample of 2,635 families. To do this, the study planned to investigate the universe of families residing in 50.0%

of the quilombola communities in the state. Using a systematic sampling strategy, 34 out of the 68 existing quilombola communities were randomly selected. These communities are distributed across 27 of the 102 municipalities in Alagoas, with the majority located between the Agreste and Sertão regions of Alagoas. The selection process involved the following steps: 1) ordering the communities alphabetically, assigning a number from 1 to 68 to each; 2) determining the sampling interval by calculating the total number of communities divided by the number of communities to be selected (68/34 = 2); 3) randomly selecting the first community to be included in the sample by generating a random number between 1 and 2 using Microsoft Excel® software with the command: = randbetween (1,2); 4) systematically adding the sampling interval to the randomly selected number to determine the other communities included in the study. All families residing in households located in the 34 selected quilombola communities were considered eligible for the study.

Study Variables and Data Collection Instruments

Insecurity food was the dependent variable and was established through the application of the adapted version of the *Escala Brasileira de Insegurança Alimentar* (EBIA, Brazilian Scale of Food Insecurity). It is worth noting that the validation study of this adapted version of EBIA included quilombola families, confirming its pertinency for use in the present study [8,26].

The adapted version of EBIA consists of 14 closed questions regarding the family's experience with food over the past three months. Each affirmative answer receives 1 point, and the sum allows classification of households according to levels of FI. The classification considers the presence or absence of residents under 18 years old in the household. Families are classified as food secure when all answers are negative (0 points). If there is any positive answer, the family is classified at some level of FI: Mild (1 to 3 points; with a resident <18 years: 1 to 5 points); Moderate (4 to 6 points; with a resident <18 years: 6-10 points); and Severe (7 to 8 points; with a resident <18 years: 11 to 14 points) [26].

Demographic, socioeconomic, and environmental data comprised the independent variables: the number of residents in the household (≤4 or >4); the presence of residents under 18 years old (yes or no); the educational level of the head of the family (illiterate, 1-4 years of education, 5-8 years of education, or >=9 years of education); participation in the Bolsa Família Program (yes or no). The economic level was also included as an independent variable, with families classified according to the Brazil Economic Classification Criterion, which distinguishes families into the A, B, C, and D+E classes, organized in descending order of economic status [27].

Additionally, the following variables were also collected: the predominant material type of the household (masonry or other); household occupancy status (owned or other means); the number of rooms (≤4 or >4); waste disposal (public collection or other methods); and water used for drinking (adequate or inadequate), with adequate water being considered that which comes from the public network, mineral, or treated with hypochlorite.

Data Collection

Data collection took place from April 2017 to January 2018. Demographic, socioeconomic, and environmental data, as well as information about the family's food situation, were obtained through structured forms that had been pretested in a pilot study. These forms were administered to the woman identified as the "head of the household" or the person responsible for food in the household.

To ensure the quality of the information, the team underwent training in three phases: theoretical, practical, and a pilot study. Data collection was carried out under the constant supervision of the project coordinator and ongoing supervision of the team, which consisted of master's and doctoral students from the Graduate Program in Nutrition at the Federal University of Alagoas. In cases of inconsistency, the information was assessed, and when necessary, a return visit to the household was made to confirm and correct the information. To facilitate access and adherence by the researchers, the initial contact with residents was mediated with the assistance of local leadership.

Data Processing and Analysis

Data entry was performed independently in duplicate using a form generated in the Epi-Info® software, version 3.5.4 (CDC, 2012). The databases were compared, and in cases of discrepancies, cross-checking was done with the printed form to eliminate potential data entry errors.

The statistical analysis was performed using the Stata® software, version 12.0 (Stata Corp., College Station). Considering that food insecurity ranges from concerns about a lack of food in the household at a later date after data collection (mild food insecurity) to qualitative and quantitative changes in family diets (moderate and severe food insecurity), for the analysis of associated factors, the outcome was considered as the sum of moderate and severe food insecurity cases. This combination was recommended by the Food and Agriculture Organization for assessing food security at the global level [28].

The prevalence of food insecurity was analyzed according to different categories of independent variables (demographic, socioeconomic, and environmental variables) using Pearson's chi-squared test. The measure of association was the Prevalence Ratio (PR) and its respective 95% confidence interval (95% CI), calculated by Poisson regression with robust variance adjustment, both in unadjusted and adjusted analyses. Associations that had statistical significance up to 20% ($p<0.2$) in the unadjusted analysis were subjected to adjusted analysis, following a hierarchical theoretical model (Figure 1) [8,29]. Statistical significance was assumed when $p<0.05$ (Wald test).
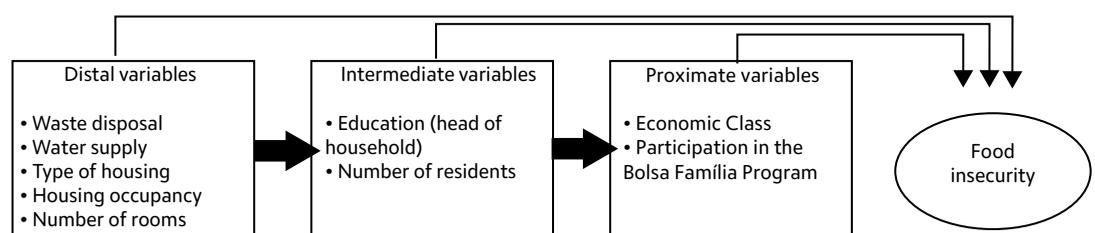
Figure 1 – Hierarchically structured theoretical model of factors associated with Food Insecurity.
Fonte: Adapted from Victora et al. [29] and Kepple and Segall-Correa [8].

The proposed hierarchical model consists of three levels: 1) distal level, composed of environmental variables (waste disposal, water supply, type of housing, home ownership, and number of rooms); 2) intermediate level, in which demographic and socioeconomic variables were analyzed (number of household members, presence of individuals under 18, and head of the family's level of education); and finally; 3) proximal level, constituted by the family's economic class and its participation in the *Bolsa Família* Program (PBF).

The analysis following the hierarchical model was initiated at the distal level, followed by subsequent levels. At each level of analysis, non-significant variables were successively eliminated (backward stepwise elimination), leaving only those with $p<0.05$ at the end of the process. After this procedure, adjusted PR and their respective 95% CI were obtained. All variables that reached $p<0.05$ at their respective hierarchical level were retained in the final model, even if in the adjusted level they exceeded this level of significance ($p>0.05$).

RESULTS

Out of the 2,526 surveyed families, 41 (1.6%) were excluded from the analysis because there were no EBIA data, resulting in a final sample of 2,485 families, mostly composed of up to four members (74.5%), with minors under 18 years old (64.3%), and belonging to the D-E economic class (93.1%). More than two-thirds (67.6%) of the families were in a situation of food insecurity, with 34.7% in the moderate and severe forms (Figure 2).
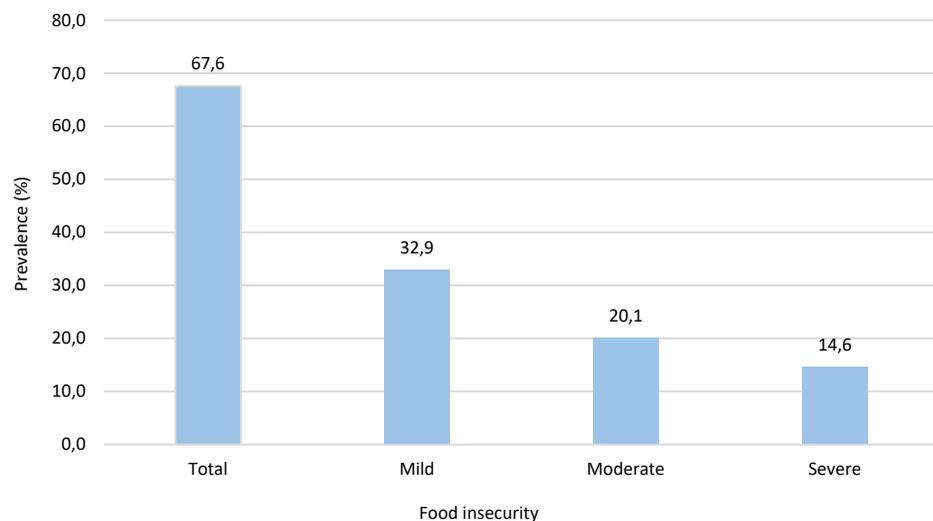

Figure 2 – Prevalence of Food Insecurity in quilombola families in the state of Alagoas, Brazil, 2018.

The characterization of the population regarding demographic, socioeconomic, and environmental variables, according to the occurrence of FI (moderate+severe), is described in Table 1. In the crude analysis, except for the household occupation regime, all other variables showed a significant association with the analyzed outcome.

The hierarchical analysis (Table 2) showed, at the distal level, that, except for household material, all other variables were positively associated with FI: households with waste disposal different from public collection, having four or fewer rooms in the household, and using inadequate water for consumption.

At the intermediate level, there was an association with households with more than four residents, with individuals under 18 years old, and with lower levels of education of the household head. Regarding the proximal variables, being in the lower economic class (D-E) and participating in the PBF remained associated with food insecurity.

Table 1 – Prevalence of Food Insecurity, according to the categories of demographic, socioeconomic, and environmental variables. Quilombola communities in the state of Alagoas, Brazil, 2018.

Variables	Total		FI[1]		Crude PR (95% CI)	p (Wald test)
	n	%	n	%		
Family size						
≤4	1852	74.5	546	29.5	1	-
>4	633	25.5	317	50.1	1.69 (1.52-1.88)	<0.001
Resident < 18 years						
No	888	35.7	223	25.1	1	-
yes	1598	64.3	640	40.1	1.59 (1.40-1.81)	<0.001
Economic class [2]						
B+C	172	6.9	25	14.5	1	-
D+E	2482	93.1	838	36.3	2.49 (1.73-3.60)	<0.001
Boss's education						
≥9 years	281	11.6	56	19.9	1	-
5 to 8 years	698	28.9	165	37.8	1.89 (1.45-2.47)	<0.001
1 to 4 years	1005	41.5	365	36.3	1.82 (1.42-2.33)	<0.001
Illiterate	436	18.0	258	36.9	1.85 (1.43-2.39)	<0.001
Bolsa Família Program						
No	1030	41.5	253	24.6	1	-
Yes	1453	58.5	610	41.9	1.71 (1.51-1.93)	<0.001
Household materials						
Masonry	2356	94.9	804	34.1	1	-
Others	127	5.1	59	46.5	1.36 (1.12-1.65)	0.004
Household occupancy regime						
Own	2282	91.9	785	34.4	1	-
Others	201	8.1	78	38.8	1.12 (0.93-1.35)	0.209
Total number of rooms in the house						
≥4	1947	78.4	629	32.3	1	-
<4	532	21.6	233	43.8	1.35 (1.20- 1.52)	<0.001
Water used for drinking						
Adequate [3]	749	30.2	203	27.1	1	-
Inadequate	1732	69.8	660	38.1	1.40 (1.23-1.60)	<0.001
Waste disposal						
Public collection	1276	51.5	398	31.2	1	-
Others	1203	48.5	464	38.6	1.23 (1.10-1.37)	<0.001

Note: [1]Encompassing moderate + severe FI. [2]According to the classification of the Brazilian Association of Research Companies (ABEP) [27]. [3]Originating from public supply, mineral, or treated with hypochlorite. CI: Confidence Interval; FI: Food Insecurity; RP: Prevalence Ratio.

DISCUSSION

The results of this study revealed a high prevalence of FI among families in the QRCs in Alagoas, making it an important issue to be considered in the governance of public policies in different sectors of the federal, state, and municipal governments [26,30].

The quilombola communities in Alagoas exhibit significant social vulnerability, as evidenced by the set of demographic and socioeconomic indicators presented here. This situation helps explain the high prevalence of food insecurity observed.

The relationship between FI and greater social vulnerability has been observed in quilombola communities since 2006, when the "Nutritional Quilombola Call" was conducted. This was the first national epidemiological survey focusing on quilombola families. The data obtained highlighted the high exposure of the quilombola population to a series of inequities that make them particularly vulnerable to a low dietary, nutritional, health, and quality of life standard.

Table 2 – Hierarchical analysis of factors associated with the prevalence of moderate or severe food insecurity[1]. Quilombola communities in the state of Alagoas, Brazil, 2018.

Variables	Distal level		Intermediate Level		Proximal Level	
	PR (95% CI)	p	PR (95% CI)	p	PR (95% CI)	p
Household materials						
Masonry	1	-				
Others	1.05 (0.85-1.30)	0.636				
Waste disposal						
Public collection	1	-	1	-	1	-
Others	1.15 (1.03-1.29)	0.011	1.10 (0.99-1.23)	0.070	1.09 (0.98-1.21)	0.112
Total number of rooms in the house						
>4	1	-	1	-	1	-
≤4	1.29 (1.14-1.45)	<0.001	1.27 (1.13-1.42)	<0.001	1.25 (1.12-1.40)	<0.001
Water used for drinking						
Adequate[2]	1	-	1	-	1	-
Inadequate	1.33 (1.16-1.52)	<0.001	1.34 (1.17-1.53)	<0.001	1.27 (1.12-1.45)	<0.001
Family size						
≤4 people			1	-	1	-
>4 people			1.42 (1.27-1.60)	<0.001	1.36 (1.21-1.53)	<0.001
Resident <18 years						
No			1	-	1	-
Yes			1.45 (1.26-1.67)	<0.001	1.25 (1.07-1.45)	0.003
Boss's education (Complete years of studies)						
≥9			1	-	1	
5 to 8			1.77 (1.37-2.30)	<0.001	1.66 (1.28-2.15)	<0.001
1 to 4			1.73 (1.35-2.22)	<0.001	1.64 (1.29-2.10)	<0.001
0 (illiterate)			1.88 (1.46-2.43)	<0.001	1.83 (1.42-2.48)	<0.001
Economic Class[3]						
B+C					1	-
D+E					1.72 (1.19-2.49)	0.004
Bolsa Família Program						
No					1	-
Yes					1.40 (1.21-1.61)	<0.001

Note: [1]Encompassing moderate + severe food insecurity. [2]Originating from public supply, mineral, or treated with hypochlorite. [3]According to the classification of the Brazilian Association of Research Companies (ABEP) [27]. CI: Confidence Interval; PR: Prevalence Ratio.

Despite the progress achieved in expanding access to health promotion policies and quality of life for this population, such as the Brazil Quilombola Program and programs promoting family farming, research conducted in other quilombola communities in Brazil has also revealed alarming prevalences of food insecurity, ranging from 64.9% to an impressive 95.5%, as reported for a quilombola community in Sergipe [17,18,20,31,32].

In a study conducted in 14 communities in the state of Tocantins, it was found that 83.2% of families suffered from FI, and of these, 14.9% experienced hunger [20]. Silva et al. (2020) found that only 20.1% of households in QRCs located in Maranhão had food security. The prevalence of FI was similar to that found in this study for the mild, moderate, and severe forms, respectively: 32.2%, 25.7% and 22% [18].

Data from the Quilombola Census 2011, a national survey that assessed 169 titled quilombola communities, showed that 85.6% of families were experiencing food insecurity, with the moderate and severe forms affecting nearly half of the families (47.8%).

An important revelation from the mentioned survey was that in quilombos located in the Northeast of the country, which is known to be poorer than the South, Southeast, and Midwest regions, there was more than a sixfold chance of experiencing FI (OR=6.68, 95% CI=5.04-8.85). This demonstrates that the well-established regional inequality, observed among other population strata,

also persisted among quilombolas [2,13,19,33]. However, in Goiás, a state located in the Midwest region, a higher prevalence of food insecurity was identified among quilombolas compared to the present study (75.2% vs. 67.6%), but with a lower occurrence of its severe form (8.5% vs. 14.6%) [21].

It is important to note that the comparability of the data found in the quilombola communities in Alagoas with other communities in the country is limited due to methodological differences: sample size, age range of participants, time differences between the investigations, and the absence of titled quilombola communities in the sample of the present study. Legal titling legitimizes ancestral areas, granting ownership and greater access to public policies, which can have an impact on overall indicators. Therefore, non-titled communities may be more exposed to FI.

Nationally, the trajectory of food insecurity follows a well-established timeline, marked by a decline in the problem starting in 2004, reflecting investments in public policies aimed at poverty reduction and promoting the right to adequate food. However, this trend reversed due to the political and economic crisis that hit Brazil in the mid-2010s [4-7,34].

The prevalence of food insecurity found in this study (67.6%) becomes even more alarming when compared to other population groups during the same period. It is higher than the prevalences identified by the Family Budget Survey (2018) at the national level (36.7%), for the Northeast region (50.3%), and exceeds the findings for the general population of Alagoas (56.7%) [35]. Still at the state level, the findings of Costa et al. show that, despite also representing a critical problem for the 3,366 families investigated, the prevalence of FI found for Alagoas (58.3%) was lower than that found among the QRCs in Alagoas. Furthermore, the quilombolas had a prevalence ratio twice as high in relation to the most intense form of FI, which indicates the presence of hunger in the household (14.7% vs 7.3), confirming the greater vulnerability attributed to quilombola peoples [5]. In line with this finding, a study comparing quilombola and non-quilombola women from Alagoas found that the former had worse socioeconomic and health conditions [24].

This scenario of inequality was also described in 21 rural communities in Bahia, where it was found that, although they lived in the same geographical area, the quilombola population had a lower prevalence of food security compared to non-quilombola (35.1% vs. 58%) [18]. Thus, it becomes evident that the profile of FI among quilombola communities reflects a combination of regional inequalities and those inherent to the historical process of social exclusion and racial prejudice they have faced. These factors have conditioned the population to a context of inequities associated with negative repercussions on access, availability, and their relationship with food [24,36-39].

Given this scenario, the Food and Agriculture Organization has pointed out the need to direct public policies towards traditional peoples to meet their ethnic and cultural specificities. To achieve this, it is essential to understand the determinants of the problem in these populations, information that is limited due to the scarcity of research with representative samples addressing this issue [17,40].

This study identified a reverse association between the level of education of the head of the household and FI. Low educational attainment is part of the spectrum of social determinants of health due to its close relationship with personal income and the development of individuals' productive potential. In addition, it may lead to less ability to select appropriate and healthy foods for your family [14,22].

Corroborating with our study, Gubert et al. showed that the prevalence of moderate and severe food insecurity was 92% higher in families whose heads had low educational attainment. However,

the authors did not find a statistically significant association between FI and a larger number of family members, which differs from the present study and findings in quilombos located in Bahia.

Just like in this research, moderate and severe food insecurity was associated with a smaller number of rooms in the household in a study conducted in a quilombo in Sergipe. In the QRCs in Alagoas, households with higher family density and those where children under 18 years old resided showed higher prevalences of food insecurity. These associations were also observed in other quilombola communities in the Northeast and in those analyzed in the Quilombola Census 2011.

Cabral et al. [41], who also found these associations, argued that the presence of children under 18 in the household might be related to lower per capita family income, as children and adolescents are economically dependent on other family members, and an increase in family size does not necessarily translate into financial improvement but, on the contrary, may increase the demand for resources for family expenses, including the purchase of food [8,14].

A study with the non-quilombola population in Alagoas also found an association between lack of access to adequate water and food insecurity, with families who drank water from public supply, mineral sources, or water treated with hypochlorite having lower prevalences than those consuming water from unsafe sources [5,42]. It should be emphasized that access to quality water is described as a human right and is established as an essential condition for ensuring food and nutrition security in its broader context [3,43].

Water insecurity, like food insecurity, can negatively affect individuals' health in diverse ways: increased risk of disease due to greater risk of microbiological contamination during its consumption or in food preparation; generating anxiety due to uncertainty about its access; and the need to use part of the family income to acquire it [14,44-46].

When investigating 696 quilombola households in Tocantins, Monego et al. [20] found a higher prevalence of FI in families without access to public garbage collection. This association has also been demonstrated in the 2011 Quilombola Census data and in studies with the general population of Alagoas and other states in the country [5,11,19,42].

It's important to highlight that the absence of this service indicates a lack of basic sanitation and can compromise food quality due to microbiological contamination, which is related to FI and a higher incidence of infectious and parasitic diseases [14,25]. Additionally, the lack of basic sanitation reflects unfavorable socioeconomic conditions because families in these circumstances may have limited resources to acquire nutritious food and ensure adequate nutrition.

In an effort to reduce existing inequalities, between 2004 and 2013, there was a joint commitment between the government and civil society to increase the inclusion of quilombola communities in social policies. In this context, conditional cash transfers through the PBF were developed as one of the strategies for promoting food and nutrition security, aiming to expand access to food through financial assistance [47-49]. The participation of quilombola families in the PBF in Alagoas was found to be associated with FI. Other studies support this result by demonstrating that PBF beneficiary families have higher prevalence of food insecurity, possibly due to the social vulnerability associated with eligibility for the program [18,20,39,50,51]. However, this should also be interpreted as the program correctly targeting its intended audience. It should be emphasized that while the PBF expands access to food, it does not necessarily improve nutritional quality, highlighting the need for nutrition education and awareness programs targeted at program beneficiaries [50,52-56].

It is noteworthy that all factors associated with FI among QRCs in Alagoas were related to the greater socioeconomic vulnerability of the family, corroborating with other studies at the state and national levels and aligning with the conceptual model of determinants of food and nutrition security proposed by Kepple and Segall-Corrêa [5,8,33,57,58]. This model suggests that basic sanitation affects community-level food security, while the demographic profile of residents, the head of the family's level of education, their financial situation, and participation in assistance programs are household-level determinants.

Considering that Brazil has recently experienced a political, economic, and health crisis, it is valid to assume that the impact of food insecurity on the studied population has likely increased since the completion of this research, as observed at the national level [2].

In this sense, the present study has the strength of being established as a baseline for understanding the epidemiological behavior of food insecurity since it was the first to assess this issue in the quilombola population of the state, and by providing an initial insight, it paves the way for more in-depth investigations in the future. However, it is important to acknowledge its limitations. Due to the cross-sectional nature of its design, it is not possible to determine the incidence of the problem or establish causal relationships between the analyzed variables.

CONCLUSION

The prevalence of FI among the quilombola population in Alagoas is a significant public health problem, affecting more than two-thirds of this population. It is independently associated with factors such as the disposal of waste other than public collection, inadequate water used for consumption, having fewer than five rooms in the residence, having more than five residents in the household, the presence of residents under 18 years of age, low educational level of the head of the family, belonging to the lower economic stratum, and participation in the Bolsa Familia Program.

Both the high prevalence of food insecurity and the factors associated with this situation highlight the context of inequalities and social vulnerability to which the quilombola population in Alagoas is subjected. Therefore, it reinforces the need to establish intersectoral strategies to reverse this scenario, such as promoting access to land, enabling the use of agricultural resources, and fostering sustainable agricultural practices.

In addition to implementing food and nutrition education programs and investing in local economic development and improvements in housing, education, and health conditions, it is essential to encourage community participation. This can help tailor existing government policies to meet the specific needs of this population while respecting their traditions and local knowledge.

Therefore, the data presented here contribute to an understanding of the situation regarding food insecurity among the QRCs in Alagoas. It also serves as a baseline for assessing temporal trends, which are crucial for evaluating, directing, and monitoring strategies to address this issue.

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CONTRIBUTORS

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