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Food Security of families with preschool children in the rural areas of the Vale do Paraíba in São Paulo

Segurança Alimentar de famílias com pré-escolares da zona rural de um município do Vale do Paraíba paulista

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Abstract

Objective: to evaluate the situation of Food Security of families with children of primary schools in the rural areas of the Vale do Paraíba Paulista. *Methods:* a cross-sectional and analytical study, in which it was applied a socioeconomic and demographic questionnaire, questions about the kitchen gardens and orchards plantation's in the houses, and Brazilian Food Insecurity Scale. The data was analyzed by descriptive statistic and the hypothesis tests followed a significance level of 5%. *Results:* the participants were 98 mothers of children from 4 months to 6 years old, living in the countryside. It was verified that 51% of the families were in Food Insecurity, predominating the light form. It was found association between Food Insecurity and the variables: educated mothers, monthly income of the families and the receiving of social benefit. *Conclusion:* a considerable number of children assessed who live in the countryside are in Food Insecurity situation; the associated factors relate to the social vulnerability of families. It is necessary to take actions that in fact will improve the access to food and living situation of these families.

Keywords: Food and Nutritional Security. Child. Rural Areas. Preschool

Resumo

Objetivo: Avaliar a situação de segurança alimentar de famílias com crianças pré-escolares da zona rural de um município do Vale do Paraíba paulista. *Métodos:* Estudo transversal e analítico, com questionário socioeconômico, demográfico e sobre o plantio de hortas e pomares nos domicílios, além da Escala Brasileira de Insegurança Alimentar. Os dados foram tratados por meio da estatística descritiva e os testes de hipóteses seguiram nível de significância de 5%. *Resultados:* Participaram da pesquisa 98 mães de crianças de quatro meses a seis anos de idade, moradoras da zona rural. Verificou-se que 51% das famílias estavam em situação de insegurança alimentar, prevalecendo a forma leve. Encontrou-se associação entre insegurança alimentar e as variáveis: escolaridade materna, renda familiar e recebimento de benefício social. *Conclusão:* Número considerável de famílias se encontrava em situação de insegurança alimentar; os fatores associados se relacionam com a vulnerabilidade social das famílias, demonstrando a necessidade de melhoria nas condições de vida e acesso aos alimentos para as famílias.

Palavras-chave: Segurança Alimentar e Nutricional. Criança. Zona Rural. Pré-Escolar

INTRODUCTION

The Human Right to Adequate Food (DHAA) is a universal right that underlies the concept of Food and Nutrition Security (SAN) in Brazil, defined under the Organic Food and Nutrition Security Law (LOSAN) as:

[...] Realization of everyone's right to regular and permanent access to quality food, in sufficient quantity, without compromising the access to other essential needs, based on health-promoting food practices which respect cultural diversity and are social, economic and environmentally sustainable.¹

The guarantee of this right requires intersectoral actions because it is a complex process not only of access to food, but of decent and adequate living conditions (social, food, work, leisure and health).²

Several indicators are used to measure SAN, either globally or individually. However, none of them can measure this phenomenon when used alone. At household level, this phenomenon has been measured using a scale, initially developed in the United States, adapted and validated in Brazil.³ The Brazilian Food Insecurity Scale (EBIA) directly measures the perception and experience of food insecurity (IA) and hunger at the household level. It is a measure that expresses access to food and provides high scale reliability, as it reflects the life experience with IA and the hunger of household components.⁴

SAN monitoring has been carried out over the last decade in various populations and communities in Brazil. This interest on the subject shows the importance of having a diagnosis of the food and nutritional situation of our people, especially those in a situation of social and food vulnerability, so that we can think of the formulation of public policies and actions to combat hunger and to the situation of IA.^{5,6}

Some studies on SAN have already been conducted in Brazil with emphasis on childhood,⁷⁻¹⁰ which will allow the present study to make comparisons at regional and national levels. Souza et al. (2012), when studying the situation of food and nutritional (in)security of children assisted in state day care centers in João Pessoa, showed that 59.6% of the families were in a situation of food and nutritional insecurity, being the milder form more frequent (32.4%).⁷ Anschau et al.,⁸ evaluating 421 beneficiary families of the Programa Bolsa Família (Family Grant Program) in a municipality of Paraná, observed that food insecurity was present in 74.6% of households, 5.9% in severe form and 23.8%, moderate. The authors also found that some variables were associated with insecurity, such as per capita income, economic class, presence of children under 18, number of household members, low education and unemployment, and concluded that the extreme condition of social vulnerability to that this population is subjected keeps families in a food insecure situation even though they are beneficiaries of a social program.⁸

In the study by Almeida et al. (2014), who assessed the food security situation of families of preschool children in a municipality of Minas Gerais, the authors found that 72.6% of households were in food and nutritional insecurity, and out of those, 47.5% had mild insecurity; 10.7%, moderate; and 14.5%, severe.⁹ Costa,¹⁰ studying 3,366 families from a representative sample of the state of Alagoas, found that 58.3% of the families were food insecure and that some factors were associated with this condition, such as the head of household is female and has no income, family income less than one minimum wage, is a beneficiary of social program, among others. Therefore, the objective of this study is to evaluate the food security situation in families of rural preschool children in a municipality of the Vale do Paraíba - SP.

METHODS

This is a cross-sectional study and a quantitative approach, conducted in rural schools in a municipality of Vale do Paraíba-SP. During the research period, in 2016, six rural education units contemplated early

childhood education, and attended about 200 children from four months to six years old. This is a non-probabilistic accessibility research, in which all mothers of children in this age group who were present at meetings and get-togethers proposed by the schools were invited to participate and were interviewed at the school.

Data collection was performed through a questionnaire with socioeconomic and demographic questions about the family of the child and the vegetable and orchard planting in households. To assess the food security of the household where the child lived, the Brazilian Food Insecurity Scale (EBIA), validated in Brazil by Segall et al.,¹¹ and adapted for national use by the Ministry of Social Development and Hunger Alleviation, was applied. in 2014.⁶ This instrument has been widely used by Brazilian official bodies to assess the food security of the population and communities, especially those in situations of food vulnerability.^{5,6,12,13}

Data were treated using descriptive statistics, with the aid of the Statistical Package for Social Sciences (SPSS), version 23.0. The hypothesis tests followed a significance level of 5%. In the data analysis, Pearson's chi-square test was used to verify the association between socioeconomic and demographic indicators and IA. The study was conducted after approval by the Research Ethics Committee, under opinion No. 1,188,031 / 2015.

RESULTS

Ninety-eight mothers of children enrolled in the six municipal public schools in the rural area of the studied municipality participated in the research. The interviewed mothers were found to be between 20 and 57 years old, and the average age was 31 years old. They had between one and six children, resulting in an average of 2.3 children per woman, who had an average of age of 59.6 months (± 10.32).

It was also observed that in several cases there were other family members living in households besides parents and children, such as the child's grandparents, which reflected a larger number of residents, which according to the data obtained, varied from two to seven, with an average of 4.5 residents per household. Table 1 shows the sociodemographic and family/maternal characteristics of preschoolers.

Table 1. Maternal / family sociodemographic characteristics of rural preschoolers. Taubaté-SP, 2016.

N = 98		
MARITAL STATUS	n	%
Single	12	12.2
Married	62	63.3
Divorced	04	4.1
Marital life	20	20.4
EDUCATION	n	%
Not reported / not reported correctly	02	2.0
Incomplete Elementary School	24	24.5
Complete primary education	18	18.4
Incomplete high school	13	13.3
Complete high school	36	36.7
Incomplete Higher School	02	2.0
Complete Higher School	03	3.1

Source: Research data.

Table 1. Maternal / family sociodemographic characteristics of rural preschoolers. Taubaté-SP, 2016. (Continues)

N = 98		
OCUPATION	n	%
Housewife	62	64.6
Housekeeper	06	6.25
Diarist	02	2.08
Cook	02	2.08
Cleaning assistant	02	2.08
Seller	02	2.08
Manicure	02	2.08
Attendant	02	2.08
Others	16	16.67
HEAD OF THE HOUSEHOLD	n	%
Mother	10	10.3
Dad	73	75.3
Mom and dad	04	4.1
Grandmother	03	3.1
Grandfather	06	6.2
Grandparents	01	1.0
FAMILY INCOME	n	%
< 1 SM	13	13.7
Between 1 and 2 SM	51	53.7
Between 2 and 3 SM	18	18.9
Between 3 and 6 SM	12	12.6
> 10 SM	01	1.1
SOCIAL BENEFIT	n	%
"Bolsa Família" Program	20	20.4
Other	01	1.0
WATER SOURCE	n	%
Well	32	32.7
Water Mine	50	51
Well and Water Mine	03	3.1
Sabesp	10	10.2
Mineral water (purchased)	03	3.1
Total	98	100
WATER TREATMENT	n	%
Not treated	39	39.8
Treated (unspecified)	04	4.1
Chlorinated	02	2.0
Filtered	38	38.8
Chlorinated and filtered	05	5.1
Water is already treated	10	10.2
Total	98	100
SEWAGE TYPE	n	%
Pit (septic or rudimentary)	91	97.8
Piped	01	1.1
River	01	1.1
Total	93	100

SM = Minimum Wage

Source: Research data.

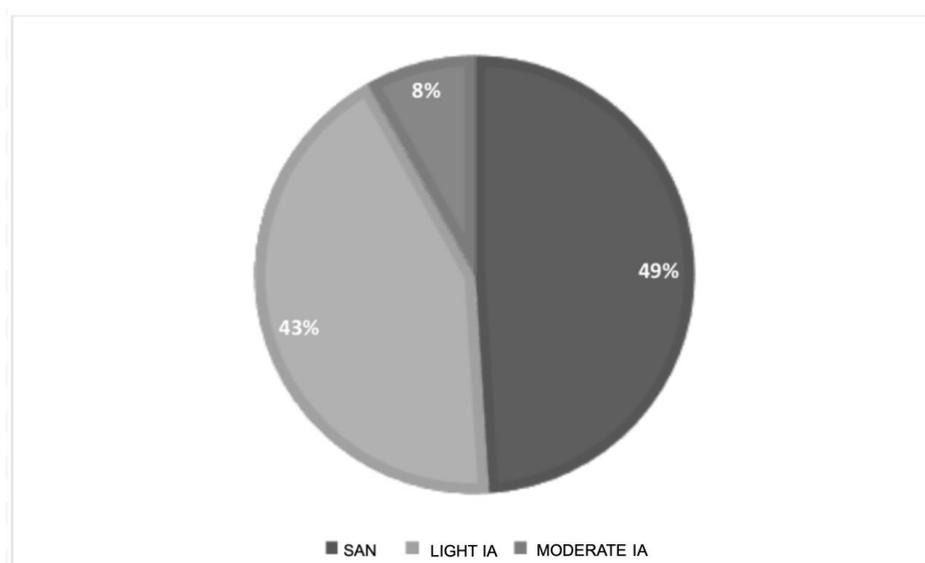
Regarding home garden planting, 55.1% of households planted at least one type of vegetable in their backyard. It was found that 100% of the families that had a vegetable garden consumed what was planted in

it, whether all food or part of them. For children, the percentage was 88.9%, being reported by most mothers (44.4%) that their children consumed vegetables seven days a week.

In addition to planting gardens, we also analyzed orchard planting in the households in question. It was found that 62.2% of families planted at least one type of fruit in their backyard. The most cultivated fruits were orange, banana, acerola, jabuticaba and mango. As was observed for vegetables, 100% of the families that grew fruits in their backyard consumed them, either all or part of the fruits. In the case of children, 98.4% of mothers stated that their children consumed the fruits planted in their homes (all or part of the fruits). As with vegetables, most mothers (49.2%) stated that their children consumed these fruits seven days a week.

Regarding EBIA, it was seen that 51% of the families were in IA, as illustrated in Figure 1. After performing the descriptive analysis of the data, statistical tests were performed in order to analyze the association between social, economic and demographic variables and the food (in)security (table 2). An association was found between food insecurity and the following variables: maternal education ($p=0.023$), family income ($p=0.000$) and social benefits ($p=0.035$).

Figure 1. Distribution of rural preschool families according to Food and nutrition security. Taubaté-SP, 2016.



SAN = Food and Nutrition Security; IA = Food Insecurity.
Source: Research data.

Table 2. Association between socioeconomic and demographic data, vegetable and orchard planting, vegetable and fruit consumption, and the Food and Nutrition Security situation of rural preschoolers. Taubaté-SP, 2016.

VARIABLES	SAN	IA	Total	P VALUE**
	n (%)	n (%)	n (%)	
MARITAL STATUS				
Single / divorced	08 (8.1%)	08 (8.1%)	16 (16.3%)	0.929
Married / living together	40 (40.8%)	42 (42.9%)	82 (83.7%)	

Source: Research data.

Table 2. Association between socioeconomic and demographic data, vegetable and orchard planting, vegetable and fruit consumption, and the Food and Nutrition Security situation of rural preschoolers. Taubaté-SP, 2016. (Continues)

VARIABLES	SAN n (%)	IA n (%)	Total n (%)	P VALUE**
EDUCATION*				
Up to High School	22 (23.0%)	33 (34.3%)	55 (57.3%)	0.023
High School and above	26 (27.0%)	15 (15.6%)	41 (42.3%)	
INCOME*				
Below 3 Minimum Wages	33 (34.7%)	49 (51.6%)	82 (86.3%)	0.000
Above 3 Minimum Wages	12 (12.6%)	01 (1.1%)	13 (13.7%)	
HEAD OF THE HOUSEHOLD*				
Mother	06 (7.2%)	04 (4.8%)	10 (12.0%)	0.440
Father	36 (43.4%)	37 (44.6%)	73 (88.0%)	0.767
SOCIAL BENEFIT				
Yes	06 (6.1%)	15 (15.3%)	21 (21.4%)	0.035
No	42 (42.9%)	35 (35.7%)	77 (78.6%)	
PBF				
Yes	06 (6.1%)	14 (14.3%)	20 (20.4%)	0.057
No	42 (48.9%)	36 (36.7%)	78 (79.6%)	
GARDEN PLANTING				
Yes	25 (25.5%)	29 (29.6%)	54 (55.1%)	0.556
No	23 (23.5%)	21 (21.4%)	44 (44.9%)	
ORCHARD PLANTING				
Yes	30 (30.6%)	31 (31.6%)	61 (62.2%)	0.959
No	18 (19.4%)	19 (19.4%)	37 (38.8%)	
VEGETABLE CONSUMPTION*				
Yes	20 (37.0%)	28 (51.9%)	48 (88.9%)	0.054
No	05 (9.3%)	01 (1.8%)	06 (11.1%)	
FRUIT CONSUMPTION*				
Yes	29 (47.6%)	31 (50.8%)	60 (98.4%)	0.305
No	01 (1.6%)	-	01 (1.6%)	

SAN = Food and Nutrition Security; IA = Food Insecurity; PBF = Family Grant Program. * Have missing values. ** Fischer's exact test.

Source: Research data.

DISCUSSION

After describing the research results, it was observed that the number of families in IA was higher than the number of families in SAN. The situation of mild IA shows that in the household, there is a concern that food may be missing before more can be purchased; In this case, the quality of food may already be decreasing. In moderate IA, the quality of food is already compromised for the whole family, in addition to the fact that adults in the household have already experienced decreased food intake. Finally, severe IA is expressed in households where adults and children have reduced their quantitative access to food and the family is starving.^{14,15}

It is important to note that the SAN has an intersectoral dimension and is capable of covering various aspects, from production to distribution of food, the promotion of the health of the population that consumes it, the preservation of biodiversity, the guarantee of food quality, creation of public policies on the subject, among others described in Law No. 11.346, in its Article 4th.¹

It is known that various aspects - resulting from structural and conjunctural factors of the organization and functioning of society - can influence the access to quality food and in sufficient quantities to meet the needs of each individual. This has been a global challenge recognized by the United Nations for over 30 years.¹⁶

Several factors can hinder and even impede access to food and nutrition for families, such as insufficient income, unemployment, poor education, land concentration and commodification of water. In

this context, it can be seen that IA realities can be identified through manifestations such as hunger, malnutrition and specific nutritional deficiencies, but also overweight and obesity, diseases caused by improper diet and consumption of foods that cause health damage - such as those contaminated by heavy metals, pesticides, fungi, bacteria etc. - and, through psychological components, such as fear and uncertainty of having (or not) food for individual and family consumption.¹⁷

As described in the results, a relationship was observed between maternal education level and family IA, as well as between total household income and IA. This fact was already expected, and the association between family income and IA has been seen in some studies.^{8,18,19} This is consistent, since in cases of income below the minimum necessary for the family, there is a high probability that their diet is affected, and sometimes compromised. An association with mothers' education is possible, since the lower the level of education, the greater the chances of a lower income than necessary, or difficulties to get a job, which may compromise the family's income and, consequently, their diet.

In addition, a low level of education could lead to lower chances of access to information, often depriving these mothers of knowledge about spending on food to make better use of their monthly income, preparation and, in the case of the countryside, even about their income. planting for self-consumption. Some researches present similar results of relationship between IA and education, showing a relationship between the level of education of the head of the household and the household IA.^{18,20} Another study also showed relationship between mother's education and the household IA, in which found that for mothers with less than seven years of education, IA was almost 1.4 times higher when compared to those with more than seven years of education.²⁰

With regard to low-income families, it was expected that with a higher monthly income, they could have better financial conditions, which would be reflected in access to food, ensuring more SAN. However, it was seen that, in the interviewed families, those who received some kind of benefit - predominantly from the Bolsa Família Program (PBF) - had higher rates of IA than non-benefited families, allowing us to infer that social benefits, including cash transfer programs (PTR), such as the PBF, are not always able to guarantee SAN for a family. Perhaps this was due to the fact that, even with the benefit, income is still insufficient to meet the basic needs of observed families, such as food. This fact was verified in a study by Anschau et al.,⁸ which showed large proportions of moderate and severe IA in households whose residents receive some PTR, and it can be inferred that, consequently, other secondary needs of these families may be harmed and/or compromised. Although there are cases in which families benefiting from PTR have higher IA, it should not be ignored that the aid of such programs plays a relevant role in social protection for this group, especially in adding or developing alternative sources of income.²¹

Regarding SAN from families benefiting from the PBF, several studies have already been performed, and the results obtained showed, in most cases, improvements in the purchasing power of food at home, even if this did not represent nutritional quality.²² According to the studies by Duarte et al.,²³ which analyzed the situation of rural families, the PBF has had a positive impact on household food consumption, which had an increase in their average annual income, since there is a direct transfer of income, increasing the possibility of purchasing food. Such expenditure (on food) represented approximately 88% of the average annual income of these benefited families.

Saldiva et al.²⁴, through anthropometric assessment and household surveys of children under five years old, associated quality of food consumption with the PBF, thus assessing the health conditions of these children. There were no significant differences between the nutritional status of beneficiary or non-

beneficiary children, and both had low consumption of vegetables and fruits. However, children who received the benefit were three times more likely to consume goodies.

Another study conducted by IBASE,²⁵ with 5,000 PBF holders in the five regions of Brazil, revealed that 87% of the analyzed families had the same benefit-spending behavior, also showing that the poorer the family, the higher the proportion of food expenses. This allows to relate family income and food (in)security situation. The survey showed that more than 70 percent of households had increased food quantity and variety, and 63 percent started buying more foods favored by children. These two facts were more present among families with moderate and severe IA, with 83% of families experiencing some type of IA. In this context, it was found that the amount of food with higher energy density and lower nutritional value was increased after receiving the benefit; on the other hand, there was also an increase in the consumption of protein sources, such as meat and milk and derivatives.

It was also found that the marital status of the mothers and the fact that some households had the mother as the “head of the family”, while in others it was the father of the child, were aspects that did not interfere with the food (in)security condition of the family. This fact showed that, for the public concerned, no such association can be made. This was the highest percentage, perhaps due to the fact that the vast majority of mothers reported being housewives, thus not receiving money to contribute to family income.

Anschau et al.,⁸ in their study with families benefiting from PTR, showed that there was a tendency for households to increase in moderate and severe IA when the “head” of the household was female, but it was not possible to make a statistical association between those two variables.

A last aspect analyzed was the planting of gardens and orchards in the households, in which there was no association between the planting and the food (in)security of the families. A relatively large percentage cultivated vegetables and fruits in their backyards, but the number of households without a garden (44.9%) can also be considered large, even in rural areas, where planting is seen as common.

The cultivation of vegetables and fruits at home can contribute to the increase in the amount of food available to families, reducing spending on food. However, this may not have been relevant to the families in question, as many of them had little variety in their cultivation. It should also be considered that many vegetables have specific seasonality and cannot be consumed all year round. If the variety of crops were larger and consumption was also high, this might become more representative in food spending, promoting savings and greater access to necessary food, as some studies have already argued.^{26,27}

Analyzing the situation of IA at the national level, it can be seen that there was a decrease in the country: data released by IBGE,²⁸ obtained through the EBIA, showed that, from 2009 to 2013, there was a reduction in the number of households in the state of IA. households analyzed with mild IA dropped from 11.1 million to 9.6 million; with moderate IA, from 3.9 million to 3.0 million; and with severe IA, from 3.0 million to 2.1 million. As a result, the number of households in the state of SAN increased from 41.4 million to 50.5 million.

It was also found in this national study,²⁸ that the prevalence of SAN in urban households was higher than in rural households. Although the numbers have decreased, it is worth noting that, according to the survey, 22.6% of Brazilian households (14.7 million) still have some level of IA, distributed in the regions of Brazil: 36.1% in the Northern Region. 38.1% in the Northeast, 14.5% in the Southeast, 14.9% in the South and 18.2% in the Midwest are in IA, a fact that highlights the importance of combating this national reality.

According to the data, the Southeast Region is the least affected by this problem today, and rural households have had a higher prevalence of IA. That is, the sample analyzed here is more vulnerable because it is rural, but it is also in the Southeast, which has lower rates of IA. Given this national and regional context,

even considering the rural area, the present study points out that the prevalence of IA in the rural area of the municipality is worrying, considering the situation of our country.

Studies that aim to evaluate the food insecurity situation of families with children in their composition are important, since growing children are at potential nutritional risk, representing a group of greater biological vulnerability. The first five years of a child's life are marked by various changes in their eating, language, cognitive, emotional and social development, and experiencing significant quantitative dietary restriction or hunger episodes during this period ultimately negatively reflects their growth and development.²⁹

For this reason, it is of utmost importance that children in this phase have ensured the right to regular and permanent access to adequate food, thus generating a condition of food and nutritional security necessary to ensure their health, well-being and growth.

CONCLUSION

In this study, it was found that a considerable number of children living in rural areas of the municipality were in IA, especially in the form of mild IA. However, even though most have shown to be mild IA, it is important to analyze the causes and why mothers still experience fear of having or not having food for themselves and their children, or even for situations of lack of food, in which they depend on donations, etc., in order to remedy the need of these families.

It was found that income is still a limiting factor for access to food in sufficient quantity and quality and, in some cases, not even social benefit aid guaranteed the SAN, although it improved the family's food security situation regarding access to the food.

Therefore, it is necessary to adopt political measures that actually improve the financial situation of these families, ensuring greater access to food. In addition, actions should be taken to promote healthy eating, so that this population uses the resources available to them to ensure SAN, such as through self-consumption planting.

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Contributors

Rodrigues AM elaborated the study design, performed analysis and interpretation of results, review of intellectual content and approval of the final version of the manuscript. Santos EC participated in the selection of study sites, data collection and analysis, analysis and interpretation of results, writing of intellectual content and approval of the final version of the manuscript. Faria TP and Faria AL participated in the study site selection, data collection and analysis, intellectual content review and approval of the final version of the manuscript. Chamon EMQO participated in the preparation, study design and study data analysis, intellectual content review and approval of the final version of the manuscript.

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