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Race/color inequality and nutritional status of children beneficiary from the Bolsa Família Program in the state of Maranhão and in Brazil

Desigualdade de raça/cor e estado nutricional de crianças beneficiárias do Programa Bolsa Família no Maranhão e no Brasil

Abstract

Introduction: Non-white population segments suffer recognized socioeconomic disadvantage, in addition to the racial inequality component that intensifies the vulnerability of these groups. *Objective*: to analyze the nutritional status according to race/color and geographic region among children from Maranhão and Brazilian beneficiaries of the PBF. ***Methods:*** Descriptive study with data on the nutritional status of children under five years of age who are beneficiaries of the PBF followed by the Food and Nutritional Surveillance System in 2017 in Brazil. ***Results:*** The indigenous race/color had the highest prevalence of malnutrition in all regions evaluated and the lowest prevalence of overweight, except in the South region. The black and yellow races/color had the highest prevalence of malnutrition as a result. The yellow and white races/color also featured high prevalence of overweight. Maranhão had higher and lower prevalences of malnutrition and overweight, respectively, than Brazil in all races/color. ***Conclusion****s*: The results of this study point to the existence of racial/color inequality in the nutritional status of the evaluated children. The greater vulnerability of indigenous children to malnutrition is highlighted.

Keywords: Malnutrition. Overweight. Obesity. Racism. Social inequity.

Resumo

Introdução: Segmentos populacionais não-brancos sofrem reconhecida desvantagem socioeconômica, além do componente da desigualdade racial que intensifica a vulnerabilidade desses grupos. Objetivo: Analisar o estado nutricional de acordo com raça/cor e região geográfica entre crianças maranhenses e brasileiras beneficiárias do PBF. ***Métodos***: Estudo descritivo com dados do estado nutricional de crianças menores de cinco anos beneficiárias do PBF acompanhadas pelo Sistema de Vigilância Alimentar e Nutricional em 2017 no Brasil. ***Resultados:*** A raça/cor indígena apresentou as maiores prevalências de desnutrição em todas as regiões avaliadas e as menores prevalências de excesso de peso, exceto na Região Sul. As raças/cor preta e amarela apresentaram as maiores prevalências de desnutrição conseguintes. As raças/cor amarela e branca também figuraram com elevadas prevalências de excesso de peso. O Maranhão obteve prevalências de desnutrição e excesso de peso superiores e inferiores, respectivamente, ao Brasil em todas as raças/cor. ***Conclusões***: Os resultados deste estudo apontam a existência de desigualdade de raça/cor no estado nutricional

das crianças avaliadas. Destaca-se a maior vulnerabilidade das crianças indígenas à desnutrição.

Palavras-chave: Desnutrição. Sobrepeso. Obesidade Racismo. Iniquidade social..

INTRODUCTION

Brazil has the largest black population outside the African continent.[1] The first blacks came to Brazil in a context of slavery and, after the abolition of slavery, they were, socioeconomically and demographically marginalized.[2-4] Likewise, Indigenous peoples were subjected to the slavery regime and, along with blacks and browns, they have marks of this context of slavery and marginalization visible until this day in their living and health conditions.[5-7]

The recognized socioeconomic disadvantage that these populations suffer have intensified investigations into the role of racial differences as determinants of the health-disease process. Authors highlight that racially vulnerable groups such as blacks, browns and indigenous people are more vulnerable to negative health and mortality outcomes and have reduced access to goods and services.[5,7-11]

Santos [12] states that 84% of racial inequality in health care in Brazil is owing to the socioeconomic disadvantage to which racially vulnerable groups are exposed. However, it is important to highlight the existence of a component of racial inequality that acts independently on health conditions, because equal resources provide greater health benefits to whites.

It is worrisome that within the group of more racially vulnerable individuals, children under five years can suffer even more from the deleterious effects arising from difficult access to services and precarious socioeconomic conditions.[13-16] These children have to face issues related to health, nutritional deviations and socioeconomic conditions which are partially or totally surpassed by other ethnic groups.[5,12,17]

In this age group, malnutrition and overweight stand out among the major nutritional deviations.[16,18] They result from food and nutritional insecurity and malnutrition, which compromise health and access to healthy food by this segment of the Brazilian population. Brazilian data from 2019 show that 14.8% of children under five were overweight based on the BMI for their age and 13.4% were below height for their age.[19]

Despite Brazil goes through the nutritional transition process and child malnutrition is on a historical downward trend, which is visible in all regions of the country, this nutritional problem still ranks ninth among leading causes of infant mortality.[11,18]

On the other hand, overweight has accelerated growth in prevalence in children of all regions, races and colors.[18,20,21] It is historically associated with conditions of affluence, its increase in the child population may not indicate an increase in family income, but in the consumption of energy-dense and micronutrient-poor foods.[20,22,23]

The Bolsa Família Program (BFP) was created by the Federal Government in 2004 as an effort to break the inter-generational transmission of poverty and nutritional problems that directly and indirectly affect the most vulnerable population segments.[24] The program provides conditional cash transfer and access to basic rights. The conditionalities of the BFP program accounted for reducing the number of poor and social inequality since it has been created, but constant surveillance of the health and nutrition conditions of vulnerable populations must still be maintained.[24,25]

The BF program seeks to fight hunger and poverty targeting poor (per capita monthly income from R$ 60.01 to R$ 120.00) and extreme poor families (per capita monthly income up to R$ 60.00), currently covering approximately 14.6 million families nationwide.[26]

Nutrition studies focusing on racial and color inequality as primary objective are scarce, especially those on children and of a national scope. Maranhão is the state with the highest number of beneficiary families in proportion to its population contingent (9.72%), hence the interest in comparing the results with Brazil.[27]

The objective of this study is to analyze the nutritional status based on race and color and geographic region comparing children who are beneficiaries of the BFP from Maranhão and from Brazil. The results of this study will

contribute to knowledge about the impact of racial inequality on the nutritional status of children from Maranhão and Brazil.

METHODS

A descriptive ecological study was carried out using secondary data on children under five years of age, who were beneficiary of BFP, followed by the Food and Nutritional Surveillance System (SISVAN) and treated in primary health care of the Unified Health System (SUS), in 2017, across the Brazilian territory. Data were collected between November and December 2018.

Children were selected from BFP beneficiary families, allowing a more homogeneous sample, from an economic and social point of view, in comparison with the SISVAN's participants, thus reducing the influence of these variables on the analysis.

Public report results from SISVAN[19] database were accessed and the desired type of report (Nutritional Status) selected, then the filters to obtain the data of interest were defined.

The SISVAN provided the following filters for obtaining the public reports: height-for-age (H/A) and BMI-for-age (BMI/A) indices and their classifications in relation to nutritional status in children under five years of age from the whole Brazilian territory (regions separately and the state of Maranhão), of both sexes, and all peoples and communities. The type of monitoring selected was the Bolsa Família Management System, to obtain data from a population that is less heterogeneous in terms of socioeconomic characteristics. The data were extracted for the following categories of race and color separately: white, yellow, black, brown and indigenous.

According to Ordinance No. 344/2017[28] of the Ministry of Health, filling out the race/color item in the forms of the health information systems must be done as described below:

> Art. 1 The collection of the item color and filling out the field race/color will be mandatory for professionals working in health services, in order to comply with the health user's self-declaration criteria, within the standards used by the Brazilian Institute of Geography and Statistics (IBGE) which appear in the forms of the health information systems as white, black, yellow, brown or indigenous.

The H/A index assessed the occurrence of child malnutrition (very low height for age + low height for age) and the BMI/A assessed overweight (overweight + obesity). SISVAN classifies malnutrition and overweight with the cutoff points proposed by the World Health Organization.[29,30] SISVAN[30] provides guidelines for the collection and analysis of anthropometric data in health services, seeking to promote the best quality in data gathering.

Confidence intervals of 95% for prevalence of nutritional deviations were calculated using the software OpenEpi®. The charts were created in Microsoft Excel®.

Because the study was conducted with secondary data from the SISVAN's public reports (public domain), there was no need to be assessed by the Research Ethics Committee, since the children cannot be identified, in accordance with Resolution No. 466/2012 of the National Health Council/Ministry of Health.

RESULTS

In this study, the sample consisted of 3,244,144 children from the whole Brazil and 252,201 from Maranhão. The race/color of indigenous children had the highest prevalence of malnutrition in the country (31.45%), which was

even higher in the North Region (38.66%). The lowest prevalence of child malnutrition among indigenous people was recorded in the Northeast Region (20.43%) (Table 1).

White children had the lowest prevalence of malnutrition in the whole country (12.45%), as well as in all regions. The lowest prevalence of malnutrition in this group was found in the Southern Region (10.92%), while the highest was found in the Northern Region (16.36%) (Table 1).

Table 1. Prevalences (%) and 95% confidence intervals of height-for-age deficits in Brazilian children under five years of age according to regions, Brazil and Maranhão, according to race/color referred to in the Food and Nutritional Surveillance System. Brazil, 2017.

Region/Local	Black		White		Brown		Indigenous		Yellow	
	n	% (IC95%)	n	% (IC95%)	n	% (IC95%)	n	% (IC95%)	n	% (IC95%)
Midwest	632	14.24(13.25-15.30)	6.279	12.29(12.01-12.57)	7.989	12.54(12.29-12.80)	2.155	25.28(24.37-26.21)	9.827	13.97(13.72-14.23)
Northeast	6.418	13.57(13.26-13.88)	31.632	12.61(12.49-12.74)	90.840	12.61(12.49-12.74)	1.597	20.43(19.56-21.34)	86.399	15.83(15.74-15.93)
North	1.396	20.20(19.27-21.16)	8.181	16.36(16.04-16.69)	44.126	19.04(18.88-19.20)	9.349	38.66(38.05-39.28)	40.340	19.99(19.82-20.17)
Southern	6.390	14.49(14.17-14.82)	39.480	12.60(12.48-12.72)	30.043	14.25(14.10-14.40)	342	24.43(22.25-26.75)	28.004	13.99(13.84-14.15)
South	981	10.95(10.32-11.61)	20.113	10.93(10.78-11.07)	2.650	11.10(10.71-11.51)	887	24.11(22.76-25.52)	2.722	12.00(11.59-12.43)
Maranhão	875	18.69(17.60-19.84)	3.778	15.98(15.52-16.45)	22.586	18.46(18.25-18.68)	810	32.53(30.71-34.41)	20.239	20.59(20.34-20.84)
Brazil	15.817	14.16(13.96-14.37)	105.685	12.45(12.38-12.52)	175.648	14.76(14.70-14.82)	14.330	31.45(31.02-31.87)	167.292	16.07(16.00-16.14)

Note: When comparing two categories, the prevalences are considered statistically different when there is no overlap between the confidence intervals

In Brazil, the highest prevalence of overweight was recorded in the yellow (18.33%) and white (17.05%) race/color segments, and the lowest among the indigenous segment (14.74%). The highest prevalence of overweight was found among indigenous (22.94%) and yellow (20.68%) children in the South Region. Similarly, overweight in children of yellow (20.25%) and white (19.18%) race/color segments from the Northeast also exceeded the national average. The lowest prevalence of overweight was found in the North Region among brown individuals (12.60%) (Table 2).

Table 2. Prevalences (%) and 95% confidence intervals of overweight in Brazilian children under five years of age by region, Brazil and Maranhão, according to race/color reported in the Food and Nutritional Surveillance System. Brazil, 2017.

Region/Local	Black		White		Brown		Indigenous		Yellow	
	n	% (95IC%)	n	% (95IC%)	n	% (95IC%)	n	% (95IC%)	n	% (95IC%)
Midwest	618	13.97 (12.98-15.02)	7.527	14.72 (14.41-15.03)	8.872	13.91 (13.64-14.18)	1.347	15.78 (15.02-16.56)	10.551	15.04 (14.78-15.30)
Northeast	8.241	17.40 (17.06-17.74)	48.156	19.18 (19.03-19.34)	114.955	17.41 (17.32-17.50)	1.298	16.60 (15.80-17.44)	110.820	20.26 (20.15-20.36)
North	1.032	14.76 (13.95-15.61)	7.651	15.33 (15.01-15.64)	29.340	12.60 (12.47-12.74)	3.052	12.62 (12.21-13.05)	31.934	15.90 (15.75-16.06)
Southern	7.221	16.36 (16.02-16.71)	49.924	15.95 (15.82-16.08)	32.419	15.34 (15.19-15.49)	186	13.36 (11.68-15.24)	33.589	16.83 (16.67-17.00)
South	1.614	17.95 (17.17-18.75)	31.530	17.12 (16.95-17.30)	3.849	16.21 (15.74-16.68)	843	22.94 (21.61-24.33)	3889	17.14 (16.66-17.63)
Maranhão	722	15.57 (14.56-16.64)	3.801	16.03 (15.57-16.50)	17.274	14.07 (13.88-14.27)	343	13.87 (12.56-15.29)	17.540	17.90 (17.67-18.15)
Brazil	18.726	16.72 (16.52-16.95)	144.788	17.05 (16.97-17.13)	189.435	15.90 (15.83-15.96)	6.726	14.74 (14.42-15.07)	190.423	18.33 (18.26-18.40)

Note: When comparing two categories, the prevalences are considered statistically different when there is no overlap between the confidence intervals

In the state of Maranhão, the prevalence of malnutrition was higher than the Brazilian prevalence in all races/colors. The indigenous race/color had the highest prevalence of malnutrition in the state of Maranhão (32.53%) followed by yellow children (20.59%). In contrast, white children had the lowest prevalence of malnutrition in the state (15.98%) and in Brazil (12.45%) (Table 1).

The prevalence of overweight in the state of Maranhão in general was lower than prevalence found for Brazilian children. White (16.03%, 95%CI: 15.57-16.50 vs. 17.05%, 95%CI: 16.97-17.13), brown (14.07%, 95%CI: 13.88-14.27 vs. 15.90%, 95%CI: 15.83-15.96) and yellow (17.90%, 95%CI: 17.67-18.15 vs. 18.33%, 95%CI: 18.26-18.40) children from Maranhão showed lower prevalence of this condition than those from Brazil (Table 2).

DISCUSSION

The indigenous children had the highest prevalence of malnutrition in all regions of Brazil, especially in the North region, where the prevalence was far more higher than of the other races/colors. White children showed the lowest prevalence of malnutrition in the country and in all regions.

It was observed that yellow and white children have a higher prevalence of overweight in Brazil. However, when stratified by region, prevalence of overweight was highest in indigenous children in the South Region, followed by yellow children in the same region.

Prevalence of malnutrition in Maranhão is higher than in Brazil among all races/colors, and prevalence of overweight is lower than in Brazil among all races/colors. These results point to the existence of racial/color inequality in the nutritional status of children under five years of age in Maranhão.

The prevalence of malnutrition among indigenous children was significantly high, especially in the Northern Region. This national percentage is higher than that found in the I National Indigenous Health and Nutrition Survey (25.7%).[31] However, it is important to highlight that the data used in this study are specifically from Bolsa Família beneficiaries, a segment of the population known to be more socioeconomically vulnerable, which may imply a higher prevalence of malnutrition.

These results are expected, because of the high vulnerability of indigenous populations in Brazil. Indigenous peoples are among the ethnic groups with the highest disease burden not only in Brazil, but also in other parts of the world.[31-33] Studies with this population have shown the disparities in the fields of health, education, housing and sanitation. Coimbra[31] stated that being indigenous in the country implies a greater chance of not completing the first year of life, suffering from malnutrition and anemia during the growing period, living with a high burden of infectious and parasitic diseases.

Indigenous communities have been reported to have less access to health services and lack of primary care.[6] Access to basic sanitation is also precarious, and data from the 1st National Indigenous Health and Nutrition Survey[31] indicate that indigenous villages have practically no sanitary infrastructure minimally adequate and compatible with that observed in the rest of the country.[31,33]

These conditions contribute to the high prevalence of primary care-sensitive health outcomes such as the high incidence of hospitalization with diarrhea (37.2%) and acute respiratory infection (47.6%).[31] Besides, these environmental and health conditions also are at the origin of malnutrition and help to explain the unequal rates between indigenous peoples and the other races/colors in Brazil.

In contrast, white children showed the lowest prevalence of malnutrition in all regions of the country as well as in Maranhão, which suggests the occurrence of racial/color inequality in the distribution of malnutrition in Brazil. The

white children, who are more privileged with regard to less exposure to discriminatory events and have greater possibility of access to education, health and employment opportunities, may thus be less exposed to the underlying causes associated with malnutrition (precarious housing conditions, unfavorable socioeconomic conditions, etc.).[34-36]

The highest prevalence of child malnutrition based on race/color was found in the North Region and the lowest prevalence in the South Region. This result demonstrates the persistence of regional inequality in Brazil, in which the richest and most developed regions show lower prevalence of child malnutrition.

Yellow and white children under five years of age presented the highest prevalence of overweight in Brazil. The more favorable socioeconomic conditions provide greater access to processed foods and fast food to this segment, which might contribute to greater weight gain. Even though the sample in this study is composed only of BFP beneficiaries, the period of time during which the benefit was paid was not considered nor the number of people in the household, which can produce difference between individuals.[37]

Muller et al.[38] identified the prevalence of overweight in white children 2% higher than in non-white children. The authors found that the prevalence of overweight in white children was associated with high birth weight, male gender, age less than one year, and short breastfeeding duration.

These results indicate that the overweight problem affects more individuals of yellow and white races/colors, while malnutrition is more restricted to vulnerable individuals like indigenous, black and brown people. However, it is noteworthy that blacks have the third highest percentage of overweight, very close to the value of whites, suggesting that black/brown children are exposed to both nutritional deviations.

In the Southern Region, indigenous and black children figure in the highest overweight positions, differing from the results of Brazil and other regions, as well as in the state of Maranhão. This scenario, although already reported for the adult population in Brazil, had not yet been observed among children.[7] Therefore, it is important to highlight that the South Region appears to be already in nutritional transition, in which excess weight increases in the most vulnerable groups.[38-40]

The Bolsa Família Program has been increasing the purchasing power of households, contributing to reducing the prevalence of malnutrition in the country, since there is evidence that the income allocated to food by these families has increased. However, it should be considered that this greater availability of food can negatively influence the profile of children, increasing their weight inappropriately due to the tendency of Brazilians to substitute fresh or minimally processed foods for ultra-processed foods.[41]

Maranhão showed one of the lowest prevalence rates of overweight in the country. However, it is important to highlight that Maranhão experiences a double burden of disease among children, as percentages of malnutrition are already similar to those of overweight, indicating an advance in the nutritional transition stage in the state. Thus, public policies aimed at fighting excess weight must take place along with those aimed at reducing malnutrition.

The present study is only a cut-ff of the target group of the Bolsa Família Program, which is a social program that selects beneficiaries based on per capita family income. In this sense, it is expected that the sample in this study is more homogeneous in terms of socioeconomic status than the general population assessed by SISVAN.

Although it is not possible to dissociate the influence of socioeconomic status on health inequality, some studies have already shown that not all variations observed in health outcomes linked to color are explained only by socioeconomic differences. This indicates disparities related in isolation to race/color.[40,42,43] Physiological, psychological, cultural and environmental effects caused by stress arising from racial discrimination would explain some differences in the occurrence of obesity according to race/color.[44-46]

Therefore, it is important to consider that health inequality is not caused only by race or socioeconomic status, but by a combination of these two factors that interact in a complex manner, resulting in different socioeconomic gradients for indigenous, black or brown individuals.

The point to be noted here is that the results of this study present an overview of the year 2017. By that time, Brazil had already been suffering from a reduction in the food and nutrition security policies by austerity measures such as Constitutional Amendment 95/2016 and the underfunding.[47] This situation was greatly aggravated by the Covid-19 pandemic in Brazil in 2020, which increased the number of people exposed to food insecurity in the country, raising the rates of hunger, unemployment and poverty.[47]

Among the strengths of the present study is the investigation of a theme that still lacks data, namely race/color inequality in issues related to nutrition, using nationally representative data from the target group of the Bolsa Família Program assisted by the SUS in Brazil. The specific cut-off for the target group of the BFP strengthens the analysis of this study, as it tends to reduce the socioeconomic heterogeneity in the sample. Furthermore, the Ministry of Health has prioritized surveys using SISVAN data for the management of the National Food and Nutrition Policy.

Finally, a number of important limitations need to be considered. First, the data in the present study are secondary, which means that there is no control on how to collect and entry the data, hampering quality control measures and reducing the possibility of measurement bias. Second, the study did not include socioeconomic variables to measure their impact on the observed differences. However, the main objective of the study was not to examine the effect of socioeconomic inequalities on nutritional status, but to describe racial differences. Socioeconomic variables should possibly act as mediators in the occurrence of the outcomes described.

CONCLUSION

The study points to the existence of racial/color inequality in the nutritional status of children under five years of age in Maranhão and Brazil. It highlights the greater vulnerability of indigenous children to malnutrition. These findings are fundamental to develop a body of scientific evidence for supporting public policy making on food and nutrition aiming to reduce racial inequalities in nutritional status of children.

The impairment of nutritional status can negatively impact health, which in the long term can affect human development and the quality of life of our population. Therefore, the importance of paying attention to making and implementing racial equity policies and contribute to the human and social development of the country and the state.

Maranhão is among the states with the largest number of beneficiaries of the Bolsa Família Program, therefore it is essential to develop specific strategies to fight racial and health inequality targeting this group, which is more vulnerable than the population in general. Furthermore, the health workers that assist the beneficiaries of the BFP must receive special attention, considering that they work with the group with the greatest vulnerability, especially in the strata of indigenous race/color.

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