

Nutritional status of children who are recipients of the Family Allowance Program followed up by the Food and Nutrition Surveillance System in the State of Minas Gerais

Estado nutricional de crianças beneficiárias do Programa Bolsa Família acompanhadas pelo Sistema de Vigilância Alimentar e Nutricional no Estado de Minas Gerais

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DOI: 10.5935/2238-3182.20140139

ABSTRACT

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Introduction: The Family Allowance Program (PBF) consists of a direct transfer of income benefiting families in poverty and extreme poverty in the country. **Objective:** this study aims to characterize the nutritional state of children less than seven years of age, beneficiaries of PBF and followed up by the Food and Nutrition Surveillance System (SISVAN) in the State of Minas Gerais (MG). **Methods:** the data were obtained from the SISVAN WEB platform from the database comprising information related to the Basic Health Units of MG for the years 2008 to 2011. The nutritional status of these children was evaluated by anthropometric indexes of weight-age, height-age, and body mass index-age (BMI/age). **Results:** the number of children in the age group from zero to seven years, benefited in the State of Minas Gerais, accounted for 10.5% of the number of total residents in the State in the same age group in 2008; 13.7% in 2009; 19.8% in 2010; and 18.6% in 2011. The most prevalent disturbance of nutritional status among users was excessive weight (average of 26.5% according to the BMI/age indicator); this status became more prevalent over the years whereas low weight and short stature declined in the age range. **Conclusions:** the beneficiaries of PBF showed reduced incidence of low birth weight and increased incidence of excessive weight. These findings reveal the need for the implementation of nutrition education programs for PBF beneficiary families.

Key words: Nutritional Status; Child; Poverty; Income; Public Policies.

RESUMO

Introdução: o Programa Bolsa Família (PBF) consiste em transferência direta de renda que beneficia famílias em situação de pobreza e de extrema pobreza no país. **Objetivo:** este trabalho objetiva a caracterização do estado nutricional de crianças menores de sete anos de idade, beneficiárias do PBF acompanhadas pelo Sistema de Vigilância Alimentar e Nutricional (SISVAN) no estado de Minas Gerais (MG). **Métodos:** os dados foram obtidos por meio da plataforma SISVAN WEB a partir do banco de dados constituído por informações advindas das Unidades Básicas de Saúde de MG referentes aos anos de 2008 a 2011. O estado nutricional dessas crianças foi avaliado pelos índices antropométricos de peso-idade, estatura-idade e índice de massa corporal-idade (IMC/idade). **Resultados:** o número de crianças beneficiadas na faixa etária de zero a sete anos no estado de MG representou 10,5% do total das residentes no estado nessa mesma faixa etária em 2008; 13,7% em 2009; 19,8% em 2010; e 18,6% em 2011. Observou-se que o maior distúrbio do estado nutricional entre os usuários é o excesso de peso (média de 26,5% conforme o indicador IMC/idade) e teve aumento em suas taxas ao longo dos anos, ao passo que o baixo peso e a baixa estatura para a idade tiveram declínio. **Conclusões:** os beneficiários do PBF apresentaram redução dos

Submitted: 2013/06/05
Approved: 2014/11/18

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índices de baixo peso e aumento dos índices de peso excessivo. Esses achados revelam a necessidade de implementação de programas de educação nutricional às famílias beneficiárias do PBF.

Palavras-chave: Estado Nutricional; Criança; Pobreza; Renda; Políticas Públicas.

INTRODUCTION

In recent years, a great nutritional transition has been observed in children in Brazil in which the prevalence of malnutrition gives way to overweight, which has become an alarming problem¹ with overweight and obesity mainly beginning at five years of age.²

It is a consequence of bad nutrition, an aggravating factor of excess and/or deficiencies in macro and micronutrients.³ Therefore, children's proper nutrition is essential to maintaining health, allowing normal growth and development. One of the ways to make appropriate choices is in the investment in health promotion from the fetal period, which not only improves maternal and child nutrition but helps to prevent and delay the onset of chronic diseases in adulthood. The feeding of a child, from birth and in the first few years of life, has great influence throughout his life.⁴

The low educational level, lack of information, and low purchasing power of parents and guardians hinder the acquisition of improved quality and more nutritious food, favoring low-quality food and a nutritional impact on childhood.⁵ Therefore, governmental initiatives involved in adverse economic situations at the different stages of the life cycle are of paramount importance.³

The government, concerned with promoting the integral attention to the health of children, implemented the Family Allowance Program, a conditional transfer program based on income established by the Law No. 10 836 of January 9, 2004, and regulated by Decree nº 5209 of September 17, 2004.⁶ This program currently serves more than 11 million households. It aims at combating hunger and inequalities between poor families (with monthly income per person from R\$70.01 to R\$140.00) and the extremely poor (with monthly income per person of up to R\$ 70.00).⁷ The families contemplated by this program receive monthly government benefits in cash upon the fulfillment of certain conditions. The Inter-ministerial Ordinance nº 2509 from November 18, 2004 offers principles of responsibilities for these families, which consists in fulfilling an agenda of commitments that include

children's school attendance, satisfactory updated vaccination schedule, and monitoring of weight and stature every six months.⁶

The Food and Nutrition Monitoring System (SISVAN) and the Family Health Strategy play an important role in the monitoring process of the families benefited from the Family Allowance Program. These provide support for managers of the Unified Health System (SUS) and healthcare professionals, helping to meet the magnitude of nutritional problems in the population beneficiary of the program, from low to overweight, generating increasing quality of care in support of health promotion activities in the community.⁸

The SISVAN aims to promote continuous information on the nutritional status of the population monitored by the SUS.⁹ Its digital version, the SISVAN WEB, was implemented throughout the Brazilian region in the year of 2008.¹⁰ When assessing the information registered in the SISVAN by municipalities, it is possible to analyze interventions consisting of various spheres of health management such as the Family Allowance in relation to its impact on the health status of the population.⁸

Although the Family Allowance Program has been implemented for almost 10 years, studies on its impact on the health of beneficiaries are still scarce, especially in regards to the diagnosis of nutritional disorders and evolution of beneficiaries. Thus, the objective of this study was to characterize the nutritional status of children recipients of the Family Allowance Program through the SISVAN WEB in the State of Minas Gerais, between 2008 and 2011.

METHODS

This was a retrospective study conducted through data in which the nutritional status of children, residents in the State of Minas Gerais, under seven years of age and beneficiaries of the Family Allowance Program was evaluated between 2008 and 2011.

All data were obtained through the SISVAN Web platform from the information bank between 2008 and 2011 of children beneficiaries of the Program in Minas Gerais. The system-generated consolidated data are available for free consultation via the web at: <http://nutricao.saude.gov.br/sisvan/relatoriospublicos/relconsolidadoacompanhamento.php>. Such data are sourced from the basic health units in the State of Minas Gerais and represent the classification of age-

weight (P/I), height-age (A/I), and body mass -age (IMC/I) indexes in this region. These parameters are obtained according to the methodology used for the evaluation of anthropometric measurements recommended in the SISVAN Manual.¹¹

The inclusion criteria consisted of data regarding children beneficiaries of the Family Allowance Program in the State of Minas Gerais who were up to seven years old. The choice of this age group was due to the data reliability because older children do not have to be weighted semi-annually.¹²

The nutritional data of children beneficiaries of the Family Allowance Program in years previous to 2008 could not be analyzed because the data are only available in the SISVAN WEB system before that year.

The nutritional assessment in children less than five years of age was carried out on the basis of indexes and cut-off points recommended by the World Health Organization.¹³ However, children between five and seven years old did not have their nutritional state classified according to the weight-stature parameter.¹⁴

The sample was evaluated as a whole and distributed by gender. The data analyzed by the P/I index were classified according to percentiles of very low weight for the age (< 0.1 percentile), low weight for the age (\geq 0.1 percentile and percentile < 3), eutrophic (\geq 10 percentile and < 97 percentile), and elevated weight for the age (\geq 97 percentile). The data collected through the A/I index were classified according to percentiles as very low height for the age (< 0.1 percentile), short stature for the age (< 3 percentile), and proper stature for the age (\geq 3 percentile). The data collected for the IMC/I index were classified according to percentiles as accentuated leanness (< 0.1 percentile), leanness (< 3 percentile), eutrophy (\geq 3 percentile and < 85 percentile), risk of overweight (> 85 percentile and \leq 97 percentile), overweight (\geq 97 percentile and < 99.9 percentile), and obesity (\geq 99.9 - for children under five years old and > 97 - for children over five years old) according to the WHO (2006).¹³

This study was approved by the Ethics on Research with Human Subjects Committee from the University of Itaúna under the opinion of number 108 433. The data obtained with the aid of the Excel® software were organized into tables and graphs in the form of percentages and absolute numbers. The Chi-square statistical test, with the aid of Epi Info version 6.04d, was used in the comparisons of the studied variables. The nutritional status of beneficiary chil-

dren was compared considering the data pertaining to the years 2008 and 2011. The significance level adopted was 5%.

RESULTS

The Family Allowance Program currently serves 853 municipalities in the State of Minas Gerais, with the total amount of 1 158 370 beneficiaries.⁷ In the period from 2008 to 2011, the number of benefited children in the age group from zero to seven years old in the State of Minas Gerais accounted for 10.5% of the total number of children residents in the State in the same age group in the year 2008; 13.7% in the year 2009; 19.8% in the year 2010; and 18.6% in 2011.¹⁵ Data regarding the nutritional status of these children according to the P/I index can be observed in Table 1. It was noted that there was an increase in the prevalence of children with high weight for the age from 7.5% to 9.1% from 2008 to 2011 whereas the prevalence of very low weight for the age remained virtually the same.

According to the anthropometric A/I index, the nutritional status of these children decreased from 6.3 to 5.8% in the percentage of low height for the age between 2008 and 2011 as described in Table 2.

According to the IMC/I index, the percentages of risk of overweight, overweight, and obesity increased over the years, whereas the percentage of eutrophic and leanness decreased in the studied population (Table 3). On average, 26.5% of the beneficiaries showed some degree of excess weight over the years. It is also worth mentioning that the risk of being overweight showed higher prevalence than obesity.

According to the gender, both the accentuated leanness and risk of overweight/obesity indexes, according to the percentile of the IMC/I index, showed higher percentage in males compared to females. However, the highest percentage of leanness in males was not statistically significant ($p = 0.13$ for the comparison of accentuated leanness averages between genders). As for the risk of overweight and obesity, the prevalence was significantly higher among boys ($p < 0.05$ for the average) than girls. In addition, the percentage of leanness decreased, and the percentage of risk of overweight/obesity increased over the years in both genders (Figure 1). The accentuated leanness was also more prevalent in males than females.

Table 1 - Nutritional status of children from 0 to 7 years of age beneficiaries of the Family Allowance Program according to the P/I index in the State of Minas Gerais, 2008-2011

Nutritional Status/Year	2008	2009	2010	2011	P value
Very low weight for the age	1.4% (3.753)	1.4% (4.991)	1.5% (6.407)	1.4% (5.494)	0.96
Low weight for the age	3.4% (9.152)	3.4% (11.914)	3.4% (13.990)	3.0% (11.880)	0.10
Appropriate weight for the age	87.7%(238.974)	87.0% (304.336)	87.1% (362.680)	86.5% (342.390)	<0.01*
Elevated weight for the age	7.5 (20.534)	8.2% (28.534)	8.0% (33.257)	9.1% (35.884)	<0.01*
<i>Total</i>	<i>272.413</i>	<i>349.775</i>	<i>416.334</i>	<i>395.648</i>	

Chi-square test; * < p 0.05.

Table 2 - Nutritional status of children from 0 to 7 years of age beneficiaries of the Family Allowance Program according to A/I index in the State of Minas Gerais, 2008-2011

Nutritional Status/Year	2008	2009	2010	2011	P value
Very low height for the age	4.7% (12.775)	4.6%(16.040)	4.8% (19.875)	4.6% (18.253)	0.69
Low height for the age	6.3%(17.280)	6.2% (21.851)	6.4% (26.655)	5.8% (22.959)	0.04*
Appropriate height for the age	89.0% (242.265)	89.2% (311.863)	88.8% (369.790)	89.6% (354.435)	<0.01*
<i>Total</i>	<i>272.320</i>	<i>349.754</i>	<i>416.320</i>	<i>395.647</i>	

Chi-square test; * < p 0.05

Table 3 - Nutritional status of children from 0 to 7 years of age beneficiaries of the Family Allowance Program according to the IMC/I index in the State of Minas Gerais, 2008-2011

Nutritional Status/Year	2008	2009	2010	2011	P value
Accentuated leanness	4.2% (11.505)	4.1% (14.308)	4.3% (17.990)	3.8% (15.024)	0.10
Leanness	3.5% (9.635)	3.6% (12.591)	3.6% (15.122)	3.3% (13.178)	0.42
Eutrophy	63.9% (174.066)	63.3% (221.269)	62.7% (260.990)	61.9% (245.071)	<0.01*
Risk of overweight	15.4% (41.930)	15.7% (54.848)	15.8% (65.639)	16.3% (64.410)	<0.01*
Overweight	6.6% (17.984)	6.9% (24.132)	7.0% (29.341)	7.5% (29.858)	<0.01*
Obesity	6.4% (17.333)	6.5% (22.644)	6.5% (27.263)	7.1% (28.114)	<0.01*
<i>Total</i>	<i>272.453</i>	<i>349.792</i>	<i>416.345</i>	<i>395.655</i>	

Chi-square test; * < p 0.05.

DISCUSSION

The present study allowed the illustration of the nutritional profile of beneficiaries of the Family Allowance Program in Minas Gerais and revealed that the greatest disturbance in nutritional status among users is the overweight status, which had significant increase in prevalence over the years, whereas the low weight status suffered a decline, although without statistical significance. Monteiro et al.¹⁶ stated that since the period from 1975 to 1989, the prevalence of underweight in the Brazilian population had fallen almost by half, while the cases of overweight doubled, featuring the so-called nutritional transition.

Monteiro et al.¹⁷ analyzed data from two studies through surveys conducted in Brazil with approximately 4 million children under the age of five in 1996 and 2006/7. These authors observed practically 50% reduc-

tion in the prevalence of malnutrition; in 1996, the percentage of malnourished was 13.5%, falling to 6.8% in the years 2006-2007. The authors discuss the increased maternal education (25.7%), increased purchasing power of households (21.7%), expansion of health care (11.6%), and improved sanitation conditions (4.3%) as probable causes for malnutrition decline.

According to gender, the risk of overweight/obesity, according to the IMC/I index, the percentage was significantly higher in males compared to females. This result was similar to those from the Family Budgets Research (2008-2009),² which revealed higher percentage of overweight in boys (16%) in comparison with girls (11.8%), five to nine years old. However, Vohlbrecht and Muniz¹⁸ reported the prevalence of overweight among children five years old and older as 11.8% among boys and 35.5% among girls.

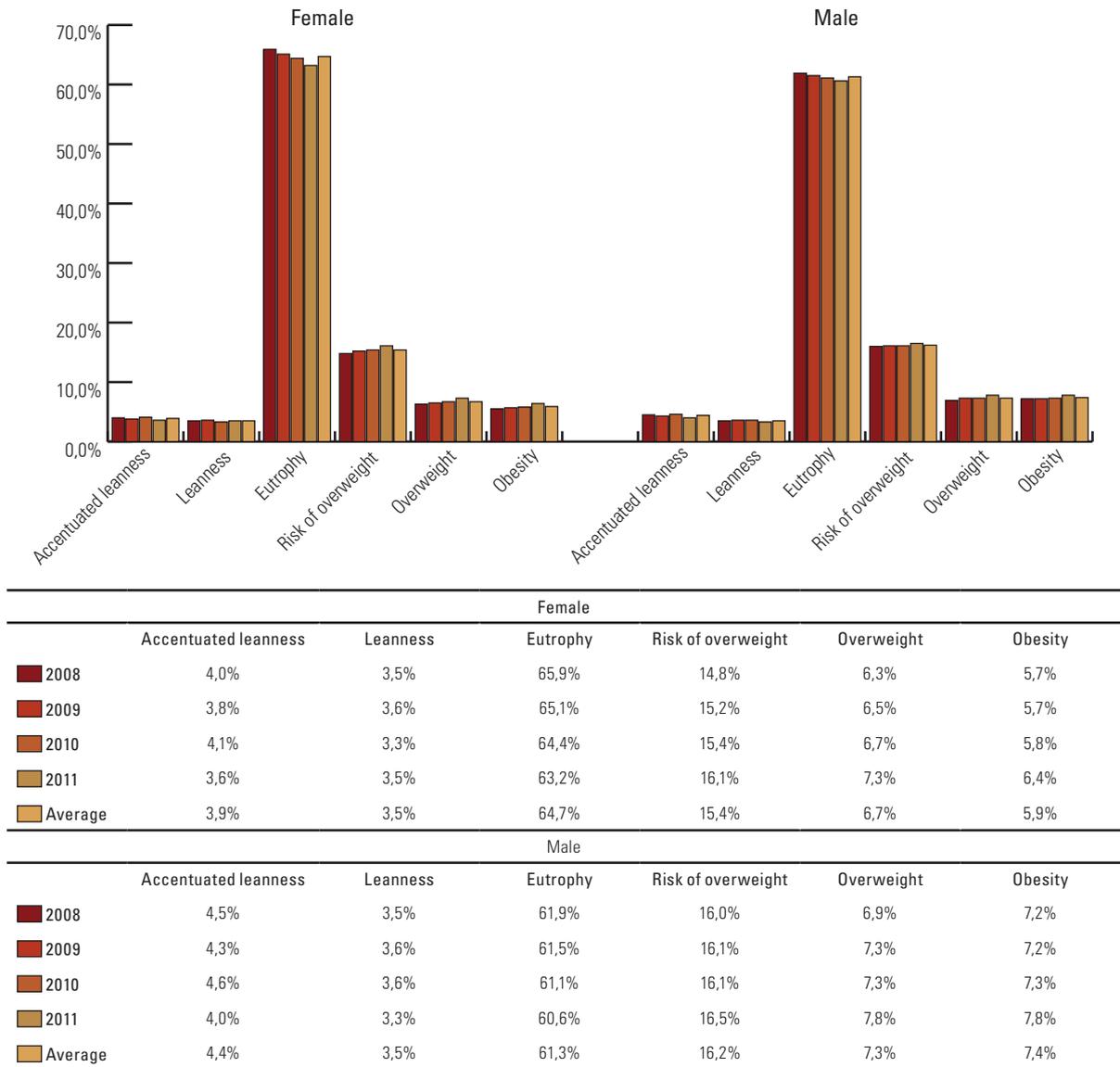


Figure 1 - Nutritional status of female and male children beneficiaries of the Family Allowance Program according to the IMC/I index in the State of Minas Gerais, 2008-2011.

In this study, it was noticed that the prevalence of height deficits for the studied age range is decreasing. There was a significant reduction of 6.3% in 2008 to 5.8% in 2011 in the prevalence of short stature for the age. According to Monteiro et al.¹⁷, different socioeconomic classes have different prevalence of chronic forms of malnutrition (height deficits for age, for example, was prevalent in 10% of the evaluated children belonging to socioeconomic class E; 6.8% in class D, and 2.5% the class C). Schooling also interfered in the nutritional status of children. A total of 14.1% of malnourished children were found among illiterate mothers. The height for age index is of paramount im-

portance in the evaluation of the nutritional status of children and represents a chronic form of malnutrition. When the linear deficit is acquired in the infant stage, it is more difficult to be reversed after two years of age. Because a reduced percentage of the anthropometric index was observed in children from Minas Gerais, and because this index has been reduced over the years on beneficiaries of the Family Allowance Program, it can be presumed that these children may not present height retardation in their adult lives.¹⁹ The POF² data reveal that height deficit decreases with increasing income. For Sawaya,²⁰ the short stature is not only synonymous with malnutrition but also with

poverty. Thus, the transfer of income through the PBF can prevent and revert this situation, as observed in this study, which is not a universal finding. Burlandy²¹ could not confirm the positive impact of the Family Allowance Program in child health.

In the present study, the percentage of children with low P/I was of 3.4% in the years 2008, 2009, and 2010, with a reduction to 3.0% in 2011. In relation to the P/I index, there was an increase from 7.5% to 9.1% in elevated weight for the age. The data found are different from those presented by Monteiro et al.²² In this study, also conducted with SISVAN data from 2008, 5.6% of children less than five years old and beneficiaries of the PBF in the State of Minas Gerais showed low weight for the age; 12.5% exhibited short stature for the age; and 10.5% high weight for the age. These data are similar to those of another study in which the weight deficit among children was 4.3%, height deficit was 9.9%, and overweight was 14.0%.²³

A high prevalence of overweight/obesity has also been found in a study of low-income families in the Northeast showing the percentage of 45%.²⁴ Aguiar²⁵ analyzing the nutritional status of children aged zero to seven years and beneficiaries of the PBF in the municipality of Paulista-PE, found prevalences of overweight and obesity of 31.8% in 2008 and 33.4% in 2009. These findings indicate that obesity can no longer be considered a condition related to the most-favored economic classes as noted by Silva et al.²⁶ because its incidence has also increased in low-income classes as demonstrated in this study and others.^{26,27}

Although the purchasing power of low-income families can limit the access to food, the increasing prevalence of overweight among low-income children is a fact. According to Coutinho et al.²⁸, obesity among Brazilian children is a public health problem resulting from bad eating habits that affect the cultural, social, and economic systems, and primarily the health system in the country.

Rinaldi²⁹ emphasizes that the insufficient consumption of fruits and vegetables and excessive consumption of foods rich in sugars and processed products can have a negative effect on the development of childhood obesity. The author assumes that the increase in overweight rates among the beneficiaries of the PBF in the State of Minas Gerais is a reflection of the misuse of funds.

In line with this hypothesis, the study of the population, beneficiary of the PBF, from 229 Brazilian municipalities through interviews revealed that the fund-

ing received is invested mostly in food. However, the resources are also used to purchase school supplies, medicines, gas, garments, and power among others. The study indicates that, out of the surveyed families, 73% increased food consumption after receiving this benefit, however, the consumption of high caloric density foods with less nutritional value (cookies, sugars, oils, and fat and processed foods) prevailed in relation to the consumption of vegetables and fruits.³⁰

A study conducted with families beneficiaries of the PBF in the municipality of Curitiba notified that individuals classified their food as inadequate, which could be caused by the lack or reduced consumption of vegetables and fruits on the account of their high costs.³¹

The increased prevalence of overweight among PBF beneficiaries seems to be more a Brazilian reality than that conditioned upon the receipt of the benefit. Some studies show that there is no statistical difference between the nutritional status of the beneficiaries of this program and non-beneficiary children.^{23,31} However, a significant difference was found in relation to the consumption of sweets by these children (three times more than non-beneficiaries). Poor families with increased income spend more on foods rich in sugars and fats; this may be the reason for the increased overweight observed in this stratum.²³

The detection of overweight during childhood is of paramount importance.³² Interventions are easier at this stage in order to prevent current and future complications. Reverting this situation will be harder the longer it remains, making the incorporation of good eating habits even more difficult.³⁴ Obesity is a risk factor for the development of complications in adulthood and may result in several non-transmissible chronic diseases such as diabetes mellitus type 2, hypertension, cardiovascular diseases, metabolic disorders, osteoarthritis, some types of cancer, and sleep apnea among others, which can also lead to morbidity and mortality.³⁵ Children with increased IMC in childhood have serious risk factors for developing cardiovascular diseases in their adult lives.³⁶

The benefits for the PBF beneficiaries from receiving income support are unquestionable. However, although the policy is bound to conditions, it should not be solely linked to income transfer. Ramos and Cuervo³⁷ concluded that there was an insufficient promotion of isolated actions to achieve the goals of the Family Allowance Program. Minimizing the difficulties becomes of great importance for the municipal management enabling better health agents, aiming

at overcoming the bureaucratization in following-up families who are benefiting from the program. The importance of a dietitian within the basic health units to monitor these families must be cited because these units are the principle for the collective and individual well-being aiming to promote health along with food and nutritional assistance.³⁸ Oliveira et al.³³ showed that there is a lack of oversight in the allocation of benefits in the Family Allowance Program, which includes recipient families that are out of the profile required by the program.

CONCLUSION

The results showed that among children from zero to seven years of age and beneficiaries of the PBF in the State of Minas Gerais, between 2008 and 2011, the prevalence of underweight and low stature for the age decreased and that for overweight increased. The nutritional transition experienced by these children lacks interventions because in the same way that malnutrition is serious and has been a public health problem in Brazil, overweight in childhood increases the chances of several disorders in the adult life. Thus, educational activities coordinated by a nutritionist aimed at encouraging healthy nutrition in the population assisted by the Family Allowance Program, and stimulated and articulated in spaces frequented by these beneficiaries – such as schools and basic health units - are of the utmost importance to food and nutritional improvements.

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