Overweight and obesity in five- to ten-year-old children benefited from Bolsa Família Program in the State of Sergipe, Brazil

Sobrepeso e obesidade em crianças de cinco a dez anos de idade beneficiárias do programa bolsa família no estado de Sergipe, Brasil

Sobrepeso y obesidad en niños de cinco a diez años de edad beneficiarias del programa «Bolsa Família» en la provincia de Sergipe, Brasil

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ABSTRACT

Objective: To estimate the prevalence of overweight and obesity in children benefited from Brazil's conditional cash transfer program (Bolsa Família Program – BFP), during the years 2008, 2009 and 2010, according to gender and health departments in the State of Sergipe, Northeast Brazil.

Methods: Descriptive epidemiological study, conducted with a secondary database of Datasus/Sisvan. The data from 79,795 children aged five to ten years old benefited from BFP in the State of Sergipe were retrieved: 20,338 children were benefitted in 2008 (9,848 females and 10,490 males), 27,106 in 2009 (13,092 females and 14,014 males) and 32,351 in 2010 (15,963 females and 16,388 males). The variables measured were body weight and height. The body mass index (BMI) was analyzed with Z scores of normative tables from Word Health Organization.

Results: The prevalence of overweight in females and males was respectively 12.2 and 12.4% in 2008; 13.2 and 13.2% in 2009; 13.1 and 13.3% in 2010. The prevalence of obesity for female and male children was respectively 11.0 and 13.5% in 2008; 11.9 and 15.1% in 2009; 11.2 and 14.5% in 2010. Overweight and obesity were more prevalent in children living in cities/towns with a lower Human Development Index.

Conclusions: A national food policy is needed in order to provide education for those who benefit from BFP to improve the quality of their nutritional intake.

RESUMO

Objetivo: Estimar a prevalência de sobrepeso e obesidade em crianças beneficiárias do Programa Bolsa Família (PBF) durante os anos de 2008 a 2010, de acordo com o sexo e com as regionais de saúde do estado de Sergipe.

Métodos: Estudo epidemiológico descritivo, conduzido com banco de dados secundário do Datasus/Sisvan. Foram obtidos 79.795 registros de crianças de cinco a dez anos de idade beneficiárias do PBF no estado de Sergipe, sendo 20.338 de 2008 (9.848 do sexo feminino e 10.490 do masculino), 27.106 de 2009 (13.092 do sexo feminino e 14.014 do masculino) e 32.351 de 2010 (15.963 do sexo feminino e 16.388 do masculino). Foram mensuradas as variáveis de massa corporal e estatura, calculando-se o índice de massa corpórea (IMC), o qual foi analisado por meio dos valores do escore Z das tabelas normativas da Organização Mundial de Saúde.

Resultados: A prevalência de sobrepeso nos sexos feminino e masculino, respectivamente, no ano de 2008 foi de 12,2 e 12,4%; em 2009, de 13,2 e 13,2% e em 2010, de 13,1 e 13,3%. A prevalência de obesidade em 2008 foi de 11,0 e 13,5%; em 2009, de 11,9 e 15,1%; e em 2010, de 11,2 e 14,5%, respectivamente, para o sexo feminino e masculino. O sobrepeso e a obesidade foram mais prevalentes em crianças de municípios com menor Índice de Desenvolvimento Humano.

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Conclusões: Recomenda-se a criação de uma política nacional nutricional que dê subsídios para os beneficiários do PBF se alimentarem com qualidade.

Palavras-chave: estado nutricional; pobreza; políticas públicas; antropometria; saúde da criança.

RESUMEN

Objetivo: Estimar la prevalencia de sobrepeso y obesidad en niños beneficiarios del Programa «Bolsa Família» (PBF) durante los años de 2008 a 2010, conforme al sexo y con las regionales de salud de la provincia de Sergipe.

Métodos: Estudio epidemiológico descriptivo, conducido con base de datos secundaria del Datasus/Sisvan. Se obtuvo 79.795 registros de niños entre cinco y diez años de edad beneficiarias del PBF en la provincia de Sergipe, siendo 20.338 el año de 2008 (9.848 del sexo femenino y 10.490 del masculino), 27.106 en 2009 (13.092 del sexo femenino y 14.014 del masculino), y 32.351 niños en 2010 (15.963 del sexo femenino y 16.388 del masculino). Se midieron las variables de masa corporal y estatura, calculándose el índice de masa corporal (IMC), que fue analizado según los valores del escore-Z de las tablas normativas de la Organización Mundial de la Salud.

Resultados: La prevalencia de sobrepeso en los sexos femenino y masculino, respectivamente, el año de 2008 fue de 12,2 y 12,4%, en 2009 de 13,2 y 13,2% y en 2010 de 13,1 y 13,3%. La prevalencia de obesidad en 2008 fue de 11,0 y 13,5%, en 2009 de 11,9 y 15,1%, y en 2010 de 11,2 y 14,5%, respectivamente, para los sexos femenino y masculino. Conforme a las regionales de salud, el sobrepeso y la obesidad fueron más prevalentes en niños de municipios con menor Índice de Desarrollo Humano.

Conclusiones: Se recomienda la creación de una política nacional alimentar que de subsidios para que los beneficiarios del PBF se alimenten con calidad.

Palabras clave: estado nutricional; pobreza; políticas públicas; antropometría; salud del niño.

Introduction

Childhood malnutrition used to be considered one of the greatest public health problems in Brazil, particularly among less economically privileged classes. However, this scenario has been changing gradually as a result of the process of nutritional transition, which is an inversion in the distribution profile of nutritional problems within a given population over time[1].

This reduction in the prevalence of malnutrition can be observed in the results of a study conducted throughout Brazil which indicates that, from the 1970s up to the end of the 1990s, the reduction in malnutrition was most accentuated in Brazil's poorest regions, namely the North and Northeast[2].

Overweight is now a reality among children from low economic strata living in favelas[3,4]. Silva *et al*[3] found that 10.1% of a sample of children from low economic strata in the city of Recife, Brazil, were overweight. Sawaya *et al*[4] observed obesity in 8.7% of the girls living in favelas in São Paulo, Brazil. However, these studies were conducted among children enrolled at public schools[3] or from a single community[4], making it difficult to achieve a true understanding of the nutritional problems of underprivileged populations, which is a barrier to more efficient public policies.

The *Bolsa Família* (BF) was created in 2003 and is now considered the largest income transfer program in the world, since it is targeted at Brazilian families living in poverty and extreme poverty[5]. It is estimated that more than 12,500,000 families benefit from the BF. Around 50% of these families live in the Northeast administrative region and the funds they receive meet their most basic needs such as nutrition and healthcare[6].

In this context it is believed that a study of children from families that receive the BF could provide good estimates of the body weight status of people in the poor and extremely poor strata of the Brazilian population. Furthermore, investigation of this situation in a state that is part of a region with serious problems in terms of income concentration, as is the case of the Northeast, could encourage debate about national health policy. Therefore, the objective of this study was to estimate the prevalence of overweight and obesity by sex and by healthcare region among 5-to-10-year-old children from families who received the BF in 2008, 2009 and 2010 and who live in Brazil's smallest state in terms of physical area.

Method

This is a descriptive epidemiological study based on figures from a secondary database, namely the *Sisvan Bolsa Familia/ Datasus* database, which is in the public domain and freely accessible via the Internet[7]. Datasus is the IT department of the Brazilian National Health Service (SUS - *Sistema Único de Saúde*), which in turn is an organ of the executive arm of the Brazilian Ministry of Health. Among other functions, Datasus is responsible for promoting, regulating and evaluating SUS IT projects; for developing, researching and adopting IT

technologies that make it possible to implement the systems and to disseminate the information necessary for health actions; for maintaining the databases needed for the healthcare information system; for ensuring that the management of SUS and related organizations have access to these IT services and databases; for specifying programs of technical cooperation with research and teaching institutions for the research and transfer of IT technology and methodology into the healthcare sector; and for providing support to states, municipal authorities and the Federal District in their efforts to computerize the activities of the SUS[7].

Sisvan is a nutrition surveillance database created to provide continuously-updated information on the nutritional condition of the Brazilian population and on the factors that influence it. This information is used as the basis for decision-making by the management of programs related to improving the standard of the dietary intake and nutritional status of the population treated by the SUS[8]. The *Sisvan Bolsa Família* is a sub-database for recording the nutritional status of BF beneficiaries. Data on the nutritional status of BF beneficiaries have been recorded since 2006, as one of the strategies chosen to monitor the nutritional condition of the Brazilian population. A software program, TabNet, is used to access data on the nutritional status of BF beneficiaries, which is recorded on the system and uploaded via the Internet at the end of each of the program's periods[8,9].

For the purposes of this study, data were collected on children from the state of Sergipe who were aged 5 to 10 years and benefited from the BF during 2008, 2009 and 2010. These 3 years were chosen because in May of 2011 they were the only years for which data were complete for the state of Sergipe in terms of body mass index (BMI) and its respective percentiles and Z-scores. The 2008 dataset covers 20,338 children aged 5 to 10, 9,848 girls and 10,490 boys. In 2009, 27,106 children were registered (13,092 females and 14,014 males). The records for 2010 cover 32,351 children, 15,963 females and 16,388 males. It is possible that the same children have been studied for 3 years, but the *Sisvan* database does not provide any way of controlling this possibility, making a longitudinal analysis problematic. Notwithstanding, since the number of children studied is different for each year, it is believed that the data offer an overview of the profile of overweight and obesity for the 3-year period.

Individual records were excluded if they lacked information on nutritional status, or if they were classified as missing parameters needed to classify nutritional status according to the chosen reference[10,11], and records for entire healthcare regions were excluded if they had exaggerated overweight/obesity prevalence rates. Exaggerated overweight/obesity prevalence was defined as a rate that was very much different from the other regions' rates and was elevated in relation to the literature on overweight/obesity. For example, healthcare regions that had prevalence rates of overweight or obesity of 30% would be excluded because that would be defined as an exaggerated prevalence of the outcome under investigation.

The nutritional status of the BF beneficiary children was classified according to their BMI, which, in turn, was calculated by dividing their body mass (kg) by the square of their height (m). The World Health Organization's cutoff points were used[10,11], since they were adopted by *Sisvan* from 2008 onwards. Body mass index cutoff points vary by age and nutritional status and can be classified using either percentiles and/or Z-scores. For the purposes of this study, figures on Z-scores calculated by the Sisvan system itself were used. There are six BMI cutoff points, based on z-score[11]: a) extremely underweight (<-3); b) underweight (>-3 and <-2); c) healthy weight (>-2 and $<+1$); d) overweight ($>+1$ and $<+2$); e) obesity ($>+2$ and $<+3$) and f) severe obesity ($>+3$). For the purposes of this study, the categories covered by a, b and c were collapsed to make a single "healthy weight" category; category d remained as "overweight" and e and f were combined to make a single "obesity" category.

Anthropometric measurements were collected and recorded in accordance with the standardized Sisvan methodology[12]. Body mass is measured using a calibrated balance, which can be of the mechanical platform or electronic digital types. Height is measured using a vertical stadiometer or an anthropometric tape fixed to a wall. Primary care health professionals are responsible for data collection and are provided with a manual describing the procedures they should employ[12].

In terms of its physical area, Sergipe is the smallest state in the Brazilian federative union (21,910km²), it is in the Northeast administrative region, has 75 municipalities and has the best Human Development Index (HDI) in the Northeast (0.742)[13]. Its estimated population is 2,019,679 inhabitants, life expectancy is 70.3 years, infant mortality is 21 children in every thousand live births and the illiteracy rate is 16.9% of people over the age of 15[14].

The municipalities in Sergipe are grouped into seven healthcare regions. For the purposes of this study, the regions were classified according to the mean HDI of their constituent municipalities[15]: Aracaju - eight municipalities (HDI=0.676); Nossa Senhora do Socorro - 12 municipalities (HDI=0.656); Itabaiana - 14 municipalities (HDI=0.635);

Propriá-16 municipalities (HDI=0.612); Estância - ten municipalities (HDI=0.601); Lagarto - six municipalities (HDI=0.594) and Nossa Senhora da Glória - nine municipalities (HDI=0.582). The HDI was adopted because it is considered to be a comparable measure and it covers three dimensions - wealth, education and mean life expectancy, and is a measure of a population's wellbeing[15].

Statistics were treated as follows: TabWin was used to download data from the *Datasus* website and to analyze them descriptively (absolute and relative frequencies); MedCalc was used to compute confidence intervals; and the chi-square test was used to identify differences between proportions. The significance level was set at 5%. Since this investigation was based on data that is in the public domain and has no direct implications on human beings, there was no need to submit it to a Research Ethics Committee.

Results

According to the Datasus/Sisvan database, none of the children were excluded because of missing records. The sample for this study was 79,795 records for children aged 5 to 10: 38,903 girls and 40,892 boys.

As shown in table 1, in 2008 the prevalence rates of overweight and obesity among female children from families on the BF program were 12.2% and 11.0%, respectively. For male children, the prevalence rates of overweight and obesity were 12.4% and 13.5%, respectively. Overweight and obesity were most prevalent in Nossa Senhora da Glória, which is the healthcare region that covers the municipalities with the lowest HDI.

In 2009, 13.2% and 11.9% of the female children analyzed were overweight and obese respectively. For the male children, the prevalence rates of overweight and obesity were 13.2% and 15.1%, respectively. For both sexes, the greatest prevalence of obesity was recorded in the Itabaiana healthcare region, which has an HDI of 0.635 (Table 2).

In 2010, the prevalence of overweight was similar for the two sexes (13.1% for females and 13.3% for males). The prevalence of obesity was 11.2% for females and 14.5% for males. There were no significant differences between healthcare regions in terms of the prevalence rates of overweight females ($p > 0.05$). In contrast, male children from municipalities with lower HDI had greater prevalence rates of overweight/obesity.

Table 1 - Prevalence rates of overweight and obesity by healthcare region for children aged 5 to 10 from families on the *Bolsa Família* program. Sergipe, 2008 (n=20,338)

| | Nutritional status | | | | | | *p* |
| | Healthy weight | | Overweight | | Obese | | |
	P	95%CI	P	95%CI	P	95%CI	
Females (n=9,848)							
Healthcare region							
Aracajú	80.1	(79.3-80.9)	11.7	(11.1-12.4)	8.2	(7.7-8.8)	
Estância	76.5	(75.7-77.3)	11.9	(11.3-12.6)	11.6	(11-12.2)	
Itabaiana	79.4	(78.6-80.2)	10.5	(9.9-11.1)	10.1	(9.5-10.7)	<0.001
Lagarto	78.2	(77.4-79)	12.3	(11.7-13.0)	9.5	(8.9-10.1)	
NS da Glória	73.4	(72.5-74.3)	13.2	(12.5-13.9)	13.4	(12.7-14.1)	
NS do Socorro	73.0	(72.1-73.9)	14.5	(13.8-15.2)	12.5	(11.8-13.2)	
Propriá	76.9	(76.1-77.7)	11.5	(10.9-12.1)	11.6	(11.0-12.2)	
Total	**76.8**	**(75.9-77.6)**	**12.2**	**(11.6-12.9)**	**11.0**	**(10.4-11.6)**	
Males (n=10,490)							
Healthcare region							
Aracaju	78.4	(77.6-79.2)	11.8	(11.2-12.4)	9.8	(9.2-10.4)	
Estância	72.3	(71.4-73.2)	13.1	(12.5-13.8)	14.6	(13.9-15.3)	
Itabaiana	73.8	(73.0-74.6)	12.7	(12.1-13.4)	13.5	(12.9-14.2)	
Lagarto	75.6	(74.8-76.4)	12.7	(12.1-13.4)	11.7	(11.1-12.3)	<0.001
NS da Glória	68.6	(67.7-69.5)	13.3	(12.7-14.0)	18.1	(17.4-18.9)	
NS do Socorro	73.0	(72.1-73.8)	12.9	(12.3-13.6)	14.1	(13.4-14.8)	
Propriá	76.8	(76.0-77.6)	10.5	(9.9-11.1)	12.7	(12.1-13.4)	
Total	**74.1**	**(73.3-74.9)**	**12.4**	**(11.8-13.0)**	**13.5**	**(12.9-14.2)**	

P: prevalence; 95%CI: confidence interval of 95%; NS: Nossa Senhora.

Table 2 - Prevalence rates of overweight and obesity by healthcare region for children aged 5 to 10 from families on the *Bolsa Família* program. Sergipe, 2009 (n=27,106)

Variables	Healthy weight		Overweight		Obesity		p
	P	95%CI	P	95%CI	P	95%CI	
Females (n=13,092)							
Healthcare region							
Aracajú	74.5	(73.7-75.2)	13.8	(13.2-14.4)	11.7	(11.2-12.3)	
Estância	82.3	(81.6-83.0)	10.8	(10.3-11.3)	6.9	(6.5-7.3)	
Itabaiana	68.7	(67.9-69.5)	14.3	(13.7-14.9)	17.0	(16.4-17.7)	
Lagarto	75.3	(74.6-76.0)	12.3	(11.7-12.9)	12.4	(11.8-13.0)	<0.001
NS da Glória	72.3	(71.5-73.1)	13.4	(12.8-14.0)	14.3	(13.7-14.9)	
NS do Socorro	77.4	(76.7-78.1)	12.7	(12.1-13.3)	9.9	(9.4-10.4)	
Propriá	74.4	(73.6-75.1)	14.8	(14.2-15.4)	10.8	(10.3-11.3)	
Total	**74.9**	**(74.1-75.6)**	**13.2**	**(12.6-13.8)**	**11.9**	**(11.4-12.5)**	
Males (n=14,014)							
Healthcare region							
Aracaju	75.8	(75.1-76.5)	12.5	(12.0-13.1)	11.7	(11.2-12.2)	
Estância	78.4	(77.7-79.1)	11.4	(10.9-11.9)	10.2	(9.7-10.7)	
Itabaiana	66.0	(65.2-66.8)	13.8	(13.2-14.4)	20.2	(19.5-20.9)	
Lagarto	71.0	(70.2-71.8)	13.3	(12.7-13.9)	15.7	(15.1-16.3)	<0.001
NS da Glória	67.8	(67.0-68.6)	13.9	(13.3-14.5)	18.3	(17.6-19.0)	
NS do Socorro	71.6	(70.8-72.3)	13.7	(13.1-14.3)	14.7	(14.1-15.3)	
Propriá	71.3	(70.6-72.0)	13.9	(13.3-14.5)	14.8	(14.2-15.4)	
Total	**71.7**	**(70.9-72.4)**	**13.2**	**(12.6-13.7)**	**15.1**	**(14.5-15.7)**	

P: prevalence; 95%CI: confidence interval of 95%; NS: Nossa Senhora.

Table 3 - Prevalence rates of overweight and obesity by healthcare region for children aged 5 to 10 from families on the *Bolsa Família* program. Sergipe, 2010 (n=32,351)

Variables	Healthy weight		Overweight		Obesity		p
	P	95%CI	P	95%CI	P	95%CI	
Females (n=15,963)							
Healthcare region							
Aracajú	76.8	(76.1-77.5)	13.2	(12.7-13.7)	10.0	(9.5-10.5)	
Estância	78.6	(78.0-79.2)	11.9	(11.4-12.4)	9.5	(9.0-10.0)	
Itabaiana	73.5	(72.8-74.2)	13.5	(13.0-14.0)	13.0	(12.5-13.5)	
Lagarto	79.2	(78.6-79.8)	11.1	(10.6-11.6)	9.7	(9.2-10.2)	<0.001
NS da Glória	72.4	(71.7-73.1)	14.6	(14.1-15.2)	13.0	(12.5-13.5)	
NS do Socorro	73.4	(72.7-74.1)	12.9	(12.4-13.4)	13.7	(13.2-14.2)	
Propriá	75.6	(74.9-76.3)	14.7	(14.2-15.3)	9.7	(9.2-10.2)	
Total	**75.7**	**(75.0-76.4)**	**13.1**	**(12.6-13.6)**	**11.2**	**(10.7-11.7)**	
Males (n=16,388)							
Healthcare region							
Aracaju	74.1	(73.4-74.8)	14.1	(13.6-14.6)	11.8	(11.3-12.3)	
Estância	75.4	(74.7-76.1)	11.1	(10.6-11.6)	13.5	(13.0-14.0)	
Itabaiana	71.1	(70.4-71.8)	13.7	(13.2-14.2)	15.2	(13.7-15.7)	
Lagarto	75.6	(74.9-76.3)	12.6	(12.1-13.1)	11.8	(11.3-12.3)	<0.001
NS da Glória	68.3	(67.6-69.0)	14.8	(14.3-15.4)	16.9	(16.3-17.5)	
NS do Socorro	69.1	(68.4-69.8)	12.6	(12.1-13.1)	18.3	(17.7-18.9)	
Própria	71.7	(71.0-72.4)	14.1	(13.6-14.6)	14.2	(13.6-14.7)	
Total	**72.2**	**(71.5-72.8)**	**13.3**	**(12.8-13.8)**	**14.5**	**(14.0-15.0)**	

P: prevalence; 95%CI: confidence interval of 95%; NS: Nossa Senhora.

Discussion

This is the first study conducted in Brazil to use a sample of children from families on the BF project and its objective was to estimate their prevalence rates of overweight and obesity during 2008, 2009 and 2010, by sex and healthcare region in the smallest state in Brazil.

Several researchers have described results that confirm those of this study, which found that overweight and obesity were serious problems in underdeveloped regions and among poor populations and that interventions are needed to control the situation[3,4,16,17].

Pelegrini *et al*[16] analyzed anthropometric data from 2,913 children aged 7 to 9 years from all five of Brazil's administrative regions and found a prevalence of overweight of 21.8% in the Northeast region, which was only lower than the percentage observed in the South (27.7%). Sawaya *et al*[4] conducted a cross-sectional study in the city of São Paulo, Brazil, investigating families with low economic level who lived in areas with little infrastructure and services, and diagnosed obesity in 6.4% of the boys and 8.7% of the girls. In the city of Recife, capital of Pernambuco state, Brazil, Silva *et al*[3] found that 32.2% of low economic level children aged 2 to 6 years and 10.1% of 7-to-9-year-olds were overweight. A study conducted in urban and rural areas in South Africa, where the population still suffers from a lack of food and from infectious and contagious diseases, detected a prevalence of overweight of the order of 19% among children less than 10 years old[17].

Economic level, access to services, living conditions, availability of food and access to information all interfere with body weight status[18]. In developing or underdeveloped countries, such as Brazil, the availability of food is a serious problem, especially among BF beneficiaries, and childhood obesity is more prevalent among the higher economic classes[2]. Among developed countries, where even low-income populations have access to food, prevalence rates of childhood obesity are lower among more privileged classes because they have greater access to information about dietary practices and greater access to physical activity[19,20].

Brophy *et al*[19] analyzed data from 17,561 children on the Millennium Cohort Study, including people from Europe, Asia and Africa, and found that inactivity, familial risk behaviors (maternal obesity, smoking near to children and not eating breakfast), low income and low educational level were the factors most closely associated with childhood obesity. Rolland-Cachera and Bellisle conducted a study of French children aged 7 to 12 years[20] and found a higher prevalence of obesity among lower socioeconomic classes, which they attributed to greater intake of energy and carbohydrates.

Although the present study has not investigated the possible causes of the risk of overweight and obesity among children living in conditions of poverty and extreme poverty, which are characteristics of the BF beneficiaries, it is possible to speculate on the basis of information available in the literature: a) foods with higher nutritional quality, including fruit and vegetables, are expensive for low income families. At the same time, the food industry makes many foods available that have elevated energy density, which provide satiety and are more palatable and of lower cost, which makes them more accessible for low income classes;[21] b) the government makes available foods with high calorie density and low nutritional power[3]. A clear example of this can be observed if one analyzes the increase in powered milk consumption from 1965 to 1985. For low-income people, powdered milk became the number one product that the State provided as food aid to underprivileged communities (at public schools and daycare centers). In contrast, during the same period the food industry began to provide people of higher economic levels with milk that was fortified and had reduced fat content. The same phenomenon can be extrapolated to other foods, such as those provided as school meals to schoolchildren in public sector education, which are rich in carbohydrates (bread, pasta, rice, potatoes)[3].

Adding further weight to these speculations is the report on the repercussions of the BF program on the food and nutritional security of its beneficiaries, which stated that 91% of the families on the program in the Northeast spend the money on food and that the poorer the family, the greater the proportion of their income is spent on food. In the Northeast, BF beneficiaries' intakes of all food groups increased, in particular sugars and, in a smaller proportion, milk and dairy products. Furthermore, families give priority to buying and eating foods they consider basic necessities and of low price, and able to achieve satiety and provide energy (higher calorie density and low nutritional value)[5].

It should be pointed out that the fact that this study used secondary data is a limitation since it means that the researchers were unable to control possible errors caused by typing and record-keeping or possible under-notification. Despite this, it is believed that the fact that these are official national statistics that are obligatory for health services to

provide means that the study results have met its objectives. The study's strong points include: 1) the use of cutoff points taken from the World Health Organization curves[10,11,22] which were based on a multicenter study that took account of ethnic diversity and the similar living conditions of the children assessed in different countries, including Brazil; 2) this is the first time information has been published on children from families on the BF program, which has become an example for social programs all over the world. These data supplement the literature with the impact that overweight

and obesity have on families with low economic status, who have problems accessing and utilizing health services.

The results allow for the conclusion that overweight and obesity are present among children living in the state of Sergipe in conditions of poverty and extreme poverty and who benefit from the BF program, with higher prevalence rates in municipalities with lower HDI. It is therefore recommended that a national food policy be created that subsidizes BF beneficiaries so they can feed themselves with good quality food.

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