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Prevalence and factors associated with stunting and excess weight in children aged 0-5 years from the Brazilian semi-arid region☆

CrossMark

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Abstract
Objective: To analyze the prevalence of excess weight and low height, and identify associated factors among children younger than five years.
Methods: Cross-census study. A total of 1,640 children from two municipalities in Piauí, Brazil were included.
Results: The prevalence of low height was 10.9% (95% CI: 9.3 to 12.4), inversely associated with mother's younger age and low level of education, lower socioeconomic status, mothers who had fewer than six prenatal consultations, and households that had more than one child younger than 5 years. Excess weight prevalence was 19.1% (95% CI: 17.2 to 21.0), and remained inversely associated with lower maternal age, low maternal education, and cesarean delivery. Stunting was greater in children aged between 12 and 23 months, while excess weight decreased with age.
Conclusions: It is noteworthy that the stunting rate, although decreasing, is still high, while the prevalence of excess weight, even in this very poor area, already exceeds the expected percentage for a population with better socioeconomic level.
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Prevalência e fatores associados ao déficit de altura e excesso de peso em crianças de 0 a 5 anos do semiárido

Resumo
Objetivo: Analisar a prevalência de excesso de peso e déficit de altura e identificar fatores associados entre menores de cinco anos.

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Estatura;
Antropometria;
Prevalência;
Transição nutricional

Métodos: Estudo censitário transversal. Foram incluídas 1.640 crianças de dois municípios do Piauí, Brasil.
Resultados: A prevalência de déficit de altura foi 10,9% (IC95%: 9,3–12,4), inversamente associado com menor idade e escolaridade materna, menor condição socioeconômica, as mães que realizaram menos de 6 consultas pré-natal e se nessas casas haviam mais de uma criança menor de cinco anos. O excesso de peso teve prevalência de 19,1% (IC95%: 17,2–21,0), e manteve-se inversamente associado com menor idade da mãe, baixa escolaridade materna e parto cesáreo. O déficit de altura foi maior para crianças entre 12 e 23 meses, enquanto o excesso de peso diminuiu com a idade.
Conclusões: Destaca-se que o déficit de altura, embora esteja diminuindo, ainda é elevado, enquanto a prevalência de excesso de peso, mesmo nesta área muito pobre, já supera o percentual esperado para uma população com melhores condições socioeconômicas.

Introduction

Brazil is still experiencing a nutritional transition phase, characterized by marked reduction in the prevalence of malnutrition and increased frequency of overweight. However, there have been very few studies in Brazil[1] that have investigated stunting and overweight in the same population of children younger than 5 years. It is noteworthy that both deficits and excess are detrimental to health, causing both physical and cognitive damage to child development. Inadequate child development affects learning and makes the child more vulnerable to several diseases, particularly the cardiovascular and metabolic.[1]

Anthropometric monitoring is necessary, as early identification of both stunting and excess weight allow interventions to be conducted in order to prevent changes throughout life and enable full development in childhood and in the next phases of the life cycle.[2]

Data from the National Demographic and Health Survey show that between 1996 and 2006 there was a decrease in the prevalence of stunting for age from 13.4% to 6.7%, while the weight deficit for age decreased from 4.2% to 1.8%.[3] In this same period, there was a decrease in weight deficit for height, from 2.2% in 1996 to 1.5% in 2006, and virtual stability in the prevalence of excess for this indicator of approximately 7% in the two years (2004-2006).[3] In summary, in the comparison of the time period evaluated, there was substantial reduction in the risk of child malnutrition in Brazil, with no evidence of temporal variation in the risk of obesity.[3]

The Household Budget Survey for the year 2008-2009 in children younger than 5 years showed the Northeast region as the region with the second highest weight for age deficit (5.9%) in the country, second only to the North region (8.5%).[4] Regarding the prevalence of excess weight, it ranged from 25% to 30% in the North and Northeast regions (more than five times the prevalence of weight deficit), and from 32% to 40% in Southeast, South, and Midwest (more than ten times the prevalence of weight deficit). Excess weight tended to be more frequent in urban than in rural areas, particularly in the North, Northeast, and Midwest regions.[4]

Considering the environmental aspects identified as the most important factors that contribute to the nutritional aspect, especially among children and adolescents, the need to carry out regionalized population-based studies to discuss the specific characteristics and context of the nutrition transition that Brazil is experiencing is emphasized.[5] Thus, the aim of this study was to analyze the prevalence of excess weight and stunting, and to identify associated factors in children younger than 5 years.

Methods

This is was census-based, cross-sectional study, which is part of a project entitled ''Health of Children younger than 5 Years and Adolescents Residing in the Municipalities of Caracol and Anísio de Abreu, PI''. The towns of Caracol and Anísio de Abreu are located in the southeast of the state of Piauí. Piauí is considered one of the poorest states in Brazil. Its economy is centered on agriculture, and the human development index (HDI) is 0.7.[6,7]

Participants that were eligible for the study included all children aged 0 to 59 months, residing in urban and rural areas of these towns between July and September of 2008.

Due to the need to identify associated factors, sample size was calculated *a posteori*, as this research was not initially designed for this purpose. The prevalence of excess weight use was 30% (> +1 Z-scores for weight/height indicator) and the remaining parameters used were as follows: alpha error of 0.05, beta error of 0.20, exposures ranging from 20% to 80%, outcome frequency among the nonexposed of at least 13%, and hazard ratio of 1.7. Thus, the study would require a sample of at least 1,293 children. This figure already includes 5% for losses and 15% for the control of potential confounders.

The data collection tool consisted of two questionnaires about the child and the mother, applied by previously selected interviewers who had been trained for this purpose to the child's mother or guardian. Data were collected on sociodemographic conditions, assistance received during pregnancy and childbirth, breastfeeding, and health service use. At the time of interview, the child's weight (portable scale with a precision of 100 grams provided by the United Nations Children's and Adolescents' Fund (UNICEF) and height (aluminum stadiometers with a precision of 1 mm) or length (Harpenden infantometer with 1 mm precision) were measured, the latter used in infants younger than 2 years of age.