Jornal de
Pediatria
www.jped.com.br

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SOCIEDADE BRASILEIRA
DE PEDIATRIA

ORIGINAL ARTICLE

Secular trends and factors associated with overweight among Brazilian preschool children: PNSN-1989, PNDS-1996, and 2006/07[☆]

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Abstract

Objective: to describe the secular trends in overweight among preschool children in the years 1989, 1996, and 2006, and to identify risk factors associated with this condition in 2006.

Methods: anthropometric data from three surveys (1989, 1996, and 2006) with a representative sample of the population were analyzed. Overweight was defined as the weight-for-height Z-score. The multivariable models of overweight association with risk factors were generated by Poisson regression, and the estimates were shown as prevalence ratios with their respective 95% confidence intervals (PR [95% CI]).

Results: throughout the 17-year period studied, the relative prevalence of overweight in preschoolers increased by 160% in Brazil, representing an increase of 9.4% per year. Based on data from the National Survey on Demography and Health of Women and Children - 2006/07, four multivariable models were created (macro-environmental, maternal, individual, and final model) assuming hierarchy among the risk factors. In the final model, only the following remained associated with overweight: regions South/Southeast (1.55 [1.17 to 2.06]), middle-class (1.35 [1.02 to 1.77]), maternal obesity (1.66 [1.22 to 2.27]), birth weight ≥ 3.9 kg (1.87 [1.31 to 2.67]), and being an only child or having only one sibling (1.81 [1.31 to 2.49]).

Conclusion: the prevalence of overweight among preschool children in Brazil has increased dramatically over the past 17 years, and it was higher in the 1996-2006 period. Future strategies for prevention and control of overweight in public health should focus or intensify actions in communities that are characterized by the presence of the risks identified in the present study.

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Tendência secular e fatores associados ao excesso de peso entre pré-escolares brasileiros: PNSN-1989, PNDS-1996 e 2006/07

Resumo

Objetivo: descrever a tendência secular do excesso de peso (EP) entre pré-escolares nos anos de 1989, 1996 e 2006 e identificar os fatores de risco associados a esta condição em 2006.

Métodos: análise dos dados de três inquéritos antropométricos (1989, 1996 e 2006) com amostra representativa da população brasileira. O EP foi definido como o escore-Z de peso-para-altura > + 2. Os modelos multivariáveis de associação do EP com os fatores de risco foram gerados por meio da regressão de Poisson e as estimativas apresentadas como razão de prevalência com seus respectivos intervalos de confiança de 95% (RP [IC 95%]).

Resultados: no período de 17 anos estudado, a prevalência relativa do EP em pré-escolares aumentou em 160% no Brasil, representando incremento de 9,4% ao ano. A partir dos dados da Pesquisa Nacional de Demografia e Saúde da Mulher e da Criança-2006/07 criamos quatro modelos multivariáveis (macroambiental, materno, individual, modelo final) assumindo hierarquia entre os fatores de risco. No modelo final, permaneceram como fatores associados ao EP: as macrorregiões Sul/Sudeste (1,55 [1,17-2,06]), a classe média (1,35 [1,02-1,77]), a obesidade materna (1,66 [1,22-2,27]), o peso ao nascer $\geq$ 3,9 kg (1,87 [1,31-2,67]) e ser filho único ou possuir um irmão (1,81 [1,31-2,49]).

Conclusão: a prevalência de EP entre pré-escolares no Brasil aumentou drasticamente nos últimos 17 anos, sendo mais intenso no intervalo de 1996-2006. Futuras estratégias de prevenção e controle do EP em saúde pública devem considerar em seu escopo, ou intensificar suas ações, nas coletividades que se caracterizem pela presença dos riscos identificados neste trabalho.

Introduction

In addition to the psychosocial, orthopedic, respiratory, and metabolic comorbidities caused by childhood obesity,[1,2] the body of evidence that correlates it to adverse events in adulthood has become increasingly solid. Juonala et al.[3] analyzed four cohorts, and verified that individuals at higher risk for type II diabetes, hypertension, hypercholesterolemia, hypertriglyceridemia, and increased intima-media thickness of the carotid artery had been overweight children who remained overweight until adulthood, followed by normal weight children who became obese adults. Recognizing that such outcomes are responsible for a decrease in the productive capacity and early death, it is essential to implement effective overweight prevention and control actions in children in different contexts.[4-7]

However, to facilitate the planning of these actions, it is crucial that the problem is adequately assessed by anthropometric surveys with national representativeness. These surveys allow for the identification of the health and nutrition profiles of the population and the distribution of their risk factors, making comparisons at national and international levels possible, either cross-sectional or over time, describing the trends of the studied indicators.[8-10] In this context, using data from the National Health and Nutrition Survey (Pesquisa Nacional de Saúde e Nutrição - PNSN-1989) and the National Woman and Child Demographic and Health Survey (Pesquisas Nacionais de Demografia e Saúde da Criança e da Mulher - PNDS-1996 and 2006/07), that it was sought to describe the secular trend of overweight exclusively among Brazilian preschool children, identifying risk factors, at different hierarchical levels, associated with this condition in the 2006/07 survey.

Methods

Study design

This study used public domain data[11] from the third PNDS-2006/07 survey, conducted between November of 2006 and May of 2007, and was approved by the Research Ethics Committee of the Universidade Federal de São Paulo (protocol number 1524/10).

The PNDS-2006/07 was a nationally representative cross-sectional survey, conducted by complex probability sampling in two stages (census sectors and households). The research environment consisted of private homes, including slums.[12]

The data related to the prevalence of overweight in preschoolers in 1989 and 1996 were obtained from the work of Taddei et al.[13] The methodologies employed in the PNSN-1989 and the PNDSs of 1996 and 2006/07 are similar, which allows for the analysis of the temporal evolution of overweight in preschoolers.

Eligibility criteria and selection

Households were considered eligible if they had at least one woman of childbearing age (18-45 years). For those who were mothers, a questionnaire was applied to collect specific data for all children younger than 60 months of age. For the purpose of this research, only the preschoolers (24-59 months) living with their mothers in the same household were selected.

Studied variables

In the analysis of secular trends of overweight, prevalence rates were estimated based on the anthropometric index