



ORIGINAL ARTICLE

## Prevalence of overweight/obesity and its association with sedentary behavior in children

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Received 26 January 2012; accepted 18 March 2012

Available online 13 November 2012

### KEYWORDS

Body mass index;  
Risk factors;  
Sedentary lifestyle

### Abstract

**Objective:** The aim of this study was to determine the prevalence of overweight and obesity in children in the northeast region of Portugal, and to examine its association with sedentary behavior.

**Methods:** Data were collected on 1786 children (907 boys, 879 girls) aged 6 to 13 years. Body mass index was calculated from measured height and weight (weight in kg/height in m squared). Overweight and obesity were determined using the International Obesity Task Force cutoff values. Sedentary behavior was assessed based on means of transport to and from school and time spent watching TV and playing video games (TVPC).

**Results:** The prevalences of overweight and obesity were 22.6% and 9.4% respectively. The differences between the sexes for both overweight and obesity were not significant. Most of the children (78.4%) go to school by car. Boys spend more time on TVPC than girls, both on weekdays and on weekends. The logistic regression model indicated a significant effect of 1.5 hours of TVPC by boys during weekdays (OR=0.246; p=0.015). Boys who spent less than 1.5 hours on weekdays on TVPC were 75.4% less likely to be overweight than those who spent more than 1.5 hours.

**Conclusion:** The prevalence of overweight and obesity was 32%. Only 12.2% of the children spend less than 1.5 hours on TVPC. Boys who spend less than 1.5 hours on TVPC are 75.4% less likely to be overweight/obese than those who spend more than 1.5 hours.

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**PALAVRAS-CHAVE**

Índice de massa corporal;  
Fatores de risco;  
Estilo de vida sedentário

## Prevalência de sobrepeso/obesidade em crianças e a sua associação com comportamentos sedentários

**Resumo**

**Objectivo:** determinar a prevalência de sobrepeso/obesidade em crianças da região Nordeste de Portugal, e analisar sua associação com o sedentarismo.

**Métodos:** Os dados foram recolhidos em 1786 crianças (n = 907 meninos, meninas n = 879) com idades entre os 6 e 13 anos, o índice de massa corporal foi calculado a partir da estatura e peso [massa corporal (kg) / Altura (m<sup>2</sup>)] medidos. O sobrepeso/obesidade foram determinados usando os valores de corte da IOTF. O comportamento sedentário foi avaliado tendo em conta: o meio de transporte e tempo gasto a ver televisão/jogar videojogos (TVPC).

**Resultados:** a prevalência de sobrepeso/obesidade foi de 22,6% e 9,4%, respetivamente. As diferenças entre os sexos, tanto para o sobrepeso como para a obesidade, não foram significativas. A maioria das crianças usa o automóvel (78,4%) para ir à escola. Os meninos gastaram mais tempo em TVPC que as meninas, tanto durante a semana como nos fins de semana. O modelo de regressão logística indicou um efeito significativo de 1,5 horas de TVPC para os meninos, durante a semana (OR = 0,246; p = 0,015). Os meninos que gastaram menos de 1,5 horas durante a semana em actividades TVPC foram 75,4% menos propensos a serem obesos do que aqueles que gastaram mais de 1,5 horas.

**Conclusão:** a prevalência de sobrepeso/obesidade atinge 32%. Apenas 12,2% gastam menos de 1,5 horas em TVPC. Os meninos que passam menos de 1,5 horas em TVPC são 75,4% menos propensos a ter sobrepeso/obesidade do que aqueles que gastam mais de 1,5 horas.

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**Introduction**

A majority of western countries and those undergoing economic transition have experienced an increase in the prevalence of childhood obesity.<sup>1</sup> As long ago as 1997, obesity was identified as a public health problem in both adults and youth.<sup>2</sup>

There is a large group of chronic diseases associated with obesity, including cardiovascular disease, diabetes, and hypertension.<sup>3,4</sup> The main causes of obesity are low levels of daily physical activity and excessive intake of high-calorie food,<sup>5</sup> leading to imbalances that increase body fat mass. The problem has several dimensions, including biological, social and psychosocial aspects, and affects all age ranges, genders and socioeconomic levels.<sup>6</sup>

Several studies conducted in Portugal<sup>7-9</sup> in children aged between 3 and 14 reveal the extent of the problem. Apart from the biological and cultural characteristics of the samples, the prevalence of overweight ranged between 13% and 30%, and the prevalence of obesity was 4-14%. These studies also indicated that females - adults and children - are more affected by this epidemic.

Despite this national trend, the situation in the northeast region of Portugal is still unknown. Thus, the main goal of this study was to determine the prevalence of overweight and obesity and its association with sedentary behavior in children of the northeast region of Portugal, as assessed by the type of transportation used between school and home and time spent watching TV and playing video games (TVPC).

**Methods****Population**

The sample consisted of 1786 subjects - 879 female and 907 male - aged between 6 and 13 years. This number corresponds to all children attending public schools in the towns of Bragança and Macedo de Cavaleiros in the northeast of Portugal. Only children who did not attend school on the days of data collection were not included.

The data were collected during the 2008 school year. Authorization was obtained from the Executive Board of each school and informed consent was obtained from all children and their parents. The study was approved by local education authorities and the ethics committee of the Polytechnic Institute of Bragança.

**Height and weight assessment**

All individuals were assessed without shoes and with minimal clothing (T-shirt and shorts). A SECA scale, model 885, was used to measure weight, and the value was recorded in kilograms with approximation to hectograms. Height was measured using a wall-mounted stadiometer; the result was recorded in centimeters.

Body mass index (BMI) (weight in kg/height in m squared) was calculated and the International Obesity Task Force (IOTF) cut-off values<sup>12</sup> for overweight and obesity were used.

**Assessment of sedentary behaviors**

All individuals in the sample answered a questionnaire about their travel to and from school (whether they walked or

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