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Why waist circumference and abdominal obesity should be included in pediatric practice

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INTRODUCTION

The childhood obesity epidemic is a serious public health problem in many countries worldwide, including Portugal[1]. Moreover, central adiposity in children has increased to a higher degree than general adiposity[2] and previous studies have shown that children within normal and overweight categories with abdominal obesity were at a higher cardio-metabolic risk than overweight children without excessive abdominal fat[3] however, it is not a routine measurement in clinical practice. The aim of this study was to observe the prevalence of abdominal obesity based on waist circumference (WC) and waist-to-height ratio (WHtR) and estimate the prevalence of abdominal obesity among normal and overweight Portuguese children.

METHODS

Weight, height, and WC were measured in a representative national sample of 793 children aged 6 to 10 years (408 girls) from the region of Coimbra, central Portugal. Participants were dressed in lightweight clothing and without shoes. International Obesity Task Force (IOTF) cut-offs were used to define overweight and obesity. Abdominal obesity was defined WHtR≥0.50 and WC≥90th sex and age-specific percentile. Data were obtained in Spring of 2013 and 2014. Chi-square tests were performed using the Statistical Package for the Social Sciences (SPSS, version 23; Chicago, IL).

RESULTS

- The prevalence of overweight and obesity among children was 21.9%, 6.1 were obese. Girls, compared to boys, had higher prevalence of all obesity indicators, but only in overweight (including obesity) the difference was significant. WHtR was more sensitive than WC to identify abdominal obesity, with 9.2% of children having a WC≥90th and 21.9% having a WHtR≥0.50 (see Figure 1).
- The prevalence of abdominal obesity among normal weight, overweight, and obese children strongly depends on the definition of abdominal obesity. Around 8% of normal weight children and 60% of overweight children had abdominal obesity (WHtR≥0.50). More girls, than boys, classified as having normal weight or overweight were abdominally obese (see Table 1).

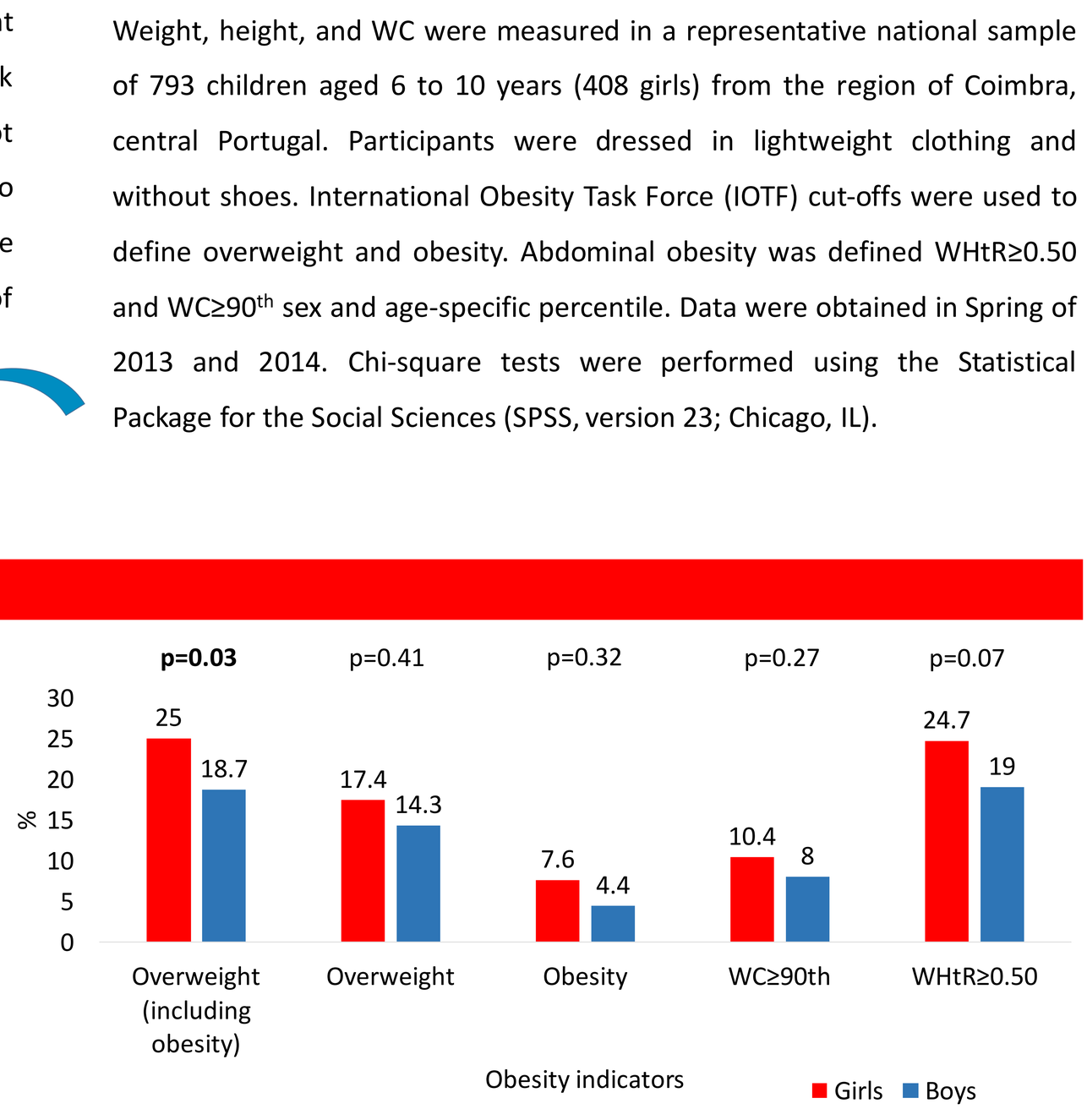

Figure 1. Prevalence of overweight (including obesity), overweight, obesity, according to the International Obesity Task Force (IOTF) cut-offs, and abdominal obesity, measured by WC and WHtR, among Portuguese girls (n=408) and boys (n=385).

Table 1. Prevalence of abdominal obesity according to BMI categories.

		Normal weight, %	Overweight, %	Obese, %
WC≥90th	All	0.6	24.1	78.6
	Girls	0.0	25.0	80.8
	Boys	1.1	23.1	75.0
WHtR≥0.50	All	8.2	59.5	95.3
	Girls	9.2	60.9	96.3
	Boys	7.3	57.7	93.8

CONCLUSION

This study shows a very high prevalence of overweight/obesity and abdominal obesity among Portuguese children which, comparing with previous studies, seems to have stabilized in the last years. A high proportion of normal and overweight children were abdominally obese and may be at high risk of obesity-related comorbidities, but would not be identified as such using traditional methods, like BMI. Present findings indicate the need to incorporate WC and WHtR into routine clinical practice, in addition to traditional BMI classification.

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3 Mokha JS, Srinivasan SR, Dasmahapatra P, Fernandez C, ChenW, et al. (2010) Utility of waist-to-height ratio in assessing the status of central obesity and related cardiometabolic risk profile among normal weight and overweight/obese children: the Bogalusa Heart Study. BMC Pediatr 10:73.

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