

ORIGINAL ARTICLE

Waist circumference distribution in Colombian schoolchildren and adolescents: The FUPRECOL Study[☆]



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KEYWORDS

Pediatrics;
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Risk factor

Abstract

Objective: This study was intended to establish the percentile distribution of waist circumference in schoolchildren from Bogota, Colombia, participating in the FUPRECOL Study.

Methods: A cross-sectional study conducted in 3,005 children and 2,916 adolescents aged 9–17.9 years. Height, weight, waist circumference, hip circumference, and self-assessed sexual maturity status were recorded. Percentiles (3rd, 10th, 25th, 50th, 75th, 90th, and 97th) and smoothed sex- and age-specific curves were calculated, and the waist circumference values found were compared to international references from other ethnic populations.

Results: Fifty-seven percent of the overall population (n=5,921) were females (mean age, 12.7 ± 2.3 years). In most age groups, waist circumference was greater in boys as compared to girls. The increase between the 50th and 97th percentiles by age was 15.7 cm in boys aged 9–9.9 years and 16.0 cm in girls aged 11–11.9 years. Comparison of our study results, by age group and sex, to international references showed that our 50th percentile was lower than reported in Peru and the UK except for studies in India, Venezuela (Merida), US, and Spain was higher.

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PALABRAS CLAVE

Pediatría;
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Conclusions: Age- and sex-specific percentiles of waist circumference obtained from children and adolescents from Bogota, Colombia, are reported. They may be used as a reference both for nutritional assessment and for predicting cardiovascular risks at early ages.

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Percentiles de circunferencia de cintura en escolares de Bogotá (Colombia): Estudio FUPRECOL

Resumen

Objetivo: El objetivo de este estudio fue establecer la distribución por percentiles de la circunferencia de cintura en una población escolar de Bogotá (Colombia) que participó en el estudio FUPRECOL.

Métodos: Estudio transversal, realizado en 3.005 niños y 2.916 adolescentes de entre 9 y 17,9 años de edad. Se tomaron medidas de peso, talla, circunferencia de cintura, circunferencia de cadera y estado de maduración sexual por autorreporte. Se calcularon los percentiles (P_3 , P_{10} , P_{25} , P_{50} , P_{75} , P_{90} y P_{97}) y curvas centiles según sexo y edad. Se realizó una comparación entre los valores de la circunferencia de cintura observados con estándares internacionales y grupos poblacionales.

Resultados: De la población general ($n=5.921$), el 57% eran chicas (promedio de edad $12,7 \pm 2,3$ años). En la mayoría de los grupos etarios, la circunferencia de cintura de los chicos fue superior a la de las chicas. El aumento entre el P_{50} - P_{97} de la circunferencia de cintura, por edad, fue mínimo de 15,7 cm en chicos de 9-9,9 años y de 16,0 cm en las chicas de 11-11,9 años. Al comparar los resultados de este estudio, por grupos de edad y sexo con trabajos internacionales, el P_{50} fue inferior al reportado en Perú e Inglaterra a excepción de los trabajos de la India, Venezuela (Mérida), Estados Unidos y España donde fue mayor.

Conclusiones: Se presentan percentiles de la circunferencia de cintura según edad y sexo que podrán ser usados de referencia en la evaluación del estado nutricional y en la predicción del riesgo cardiovascular por exceso de adiposidad desde edades tempranas.

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Introduction

It has been estimated that 10% of children of school age worldwide have excess weight and that 25% of them are obese.¹ In a recent review, Rivera et al.² analyzed data collected from population studies conducted in countries such as Brazil, Mexico, Argentina, Peru, Colombia, and Chile between 2008 and 2013, and concluded that one out of five Latin American children and adolescents have overweight and obesity. According to these authors, by 2015 the prevalence of this risk factor in the population over 20 years of age would reach 39%, as compared to the 23% prevalence in 2010. According to the most recent Nutritional Survey conducted in Colombia (2010)³ and the Report Card published by González et al.,⁴ 13.4% of children have excess weight and 4.1% of adolescents are obese.

It has been estimated that interventions for the control and treatment of central obesity significantly increase healthcare costs and decrease academic performance in school.⁵ For this reason, the early identification of the risk of pediatric obesity at school is a priority in primary care. Waist circumference (WC) is an anthropometric marker used to estimate abdominal fat^{6,7} because it has a positive and significant correlation to the amount of intra-abdominal fat and

makes it possible to identify people with cardiometabolic risk with greater accuracy than the body mass index (BMI).⁸

South American people have unique body growth, development, and composition characteristics because of their racial intermix of European, American Indian, and African ancestors. This makes it difficult to establish the changes and differences in environmental and genetic factors.^{2,9} WC percentiles, rather than absolute values, have been used to compensate for the variations inherent in child development and ethnic origin.¹⁰ Several studies have reported reference values and WC centile charts for children and adolescents in countries such as Colombia (Santiago de Cali),¹¹ Venezuela (Mérida),¹² Peru,¹³ India,¹⁴ England,¹⁵ United States,¹⁶ Spain (*Alimentación y valoración del estado nutricional en adolescentes*, [Diet and assessment of nutritional status in adolescents], AVENA),¹⁷ and Europe (*Healthy lifestyle in Europe by nutrition in adolescence*, HELENA¹⁸; *Identification and prevention of diet-induced effects and lifestyle on children's health*, IDEFICS).¹⁹

The purpose of this study was to determine the percentile distribution of waist circumference in a school population from Bogotá (Colombia) participating in the FUPRECOL study. A secondary objective was to compare WC values recorded in this and other international studies.

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