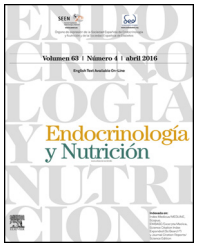
Endocrinol Nutr. 2016;63(10):511–518

SEEN Sociedad Española de Endocrinología y Nutrición

SOCIEDAD ESPAÑOLA DE DIABETES

ENDOCRINOLOGÍA Y NUTRICIÓN

www.elsevier.es/endo



ORIGINAL ARTICLE

Cardiovascular risk factors in scholars (RIVACANGAS)☆

Rocío Mera-Gallego[a], Patricia García-Rodríguez[b], Marta Fernández-Cordeiro[b], Ángeles Rodríguez-Reneda[c], Natalia Vérez-Cotelo[d], N. Floro Andrés-Rodríguez[a,*], J. Antonio Fornos-Pérez[e], Itxaso Rica-Echevarría[f]

[a] *Farmacia Comunitaria, Grupo Berbés de Investigación y Docencia, Vigo, Pontevedra, Spain*
[b] *Farmacia Comunitaria, Grupo Berbés de Investigación y Docencia, Cangas do Morrazo, Pontevedra, Spain*
[c] *Psicología, Cangas do Morrazo, Pontevedra, Spain*
[d] *Facultad de Farmacia, Universidad San Pablo-CEU, Grupo Berbés de Investigación y Docencia, Vigo, Pontevedra, Spain*
[e] *Farmacia Comunitaria, Grupo Berbés de Investigación y Docencia, Grupo de Diabetes de SEFAC y Grupo de Consensos de la SED, Facultad de Farmacia, Universidad de Santiago de Compostela, Cangas do Morrazo, Pontevedra, Spain*
[f] *Sección de Endocrinología Pediátrica, Hospital Universitario de Cruces, CIBERDEM, Barakaldo, Bizkaia, Spain*

Received 29 April 2016; accepted 13 July 2016
Available online 4 December 2016

KEYWORDS
Cardiovascular risk;
Adolescents;
Body mass index;
Waist circumference;
Blood pressure

Abstract
Background and aim: The current guidelines for treatment of high blood pressure do not include any section dedicated to hypertension in children and adolescents or to cardiovascular disease (CVD) prevention strategies in that age group. Our study was aimed at identifying cardiovascular risk factors (CVRFs) in an adolescent sample.
Subjects and methods: A cross-sectional study of a sample of adolescents aged 12–17 years (n = 630), conducted from October 2014 to February 2015 in four schools in Cangas do Morrazo (Pontevedra). *Sociodemographic variables*: age, sex, personal and family history of hypertension and diabetes (DM). *Anthropometric variables*: body mass index (BMI, kg/m^2), waist circumference (WC, cm), waist/height index (WHI), blood pressure (mmHg).
Results: The study sample consisted of 295 female and 335 male adolescents (mean age: 13.8 ± 1.4). CVR-related conditions: hypercholesterolemia (7.1%), CVD (1.7%), hypertension (0.8%) and diabetes (0.3%). BMI (22.0 ± 3,8) was higher in males (22.4 ± 3.8 vs 21.0 ± 3.2; $p < .01$). Overweight was greater in females (27.6% vs 19.7%; $p < .05$). Seven percent of subjects were obese, 63.8% had systolic BP > P90 and 23.7% had diastolic BP > P90.
Waist circumference positively correlated with age ($r = 0.1669$; $p < .0001$) and was greater in males (75.4 ± 10.9 vs 72.9 ± 8.9; $p < 0.01$); 27.1% of adolescents had a waist circumference > P75, and 7.5% > P90. Eighty-four (13.3%) adolescents had two CVRFs (overweight + another).

☆ Please cite this article as: Mera-Gallego R, García-Rodríguez P, Fernández-Cordeiro M, Rodríguez-Reneda Á, Vérez-Cotelo N, Andrés-Rodríguez NF, et al. Factores de riesgo cardiovascular en adolescentes escolarizados (RIVACANGAS). Endocrinol Nutr. 2016;63:511–518.

* Corresponding author.
E-mail address: farmaciaalaxe@galicia.com (N.F. Andrés-Rodríguez).

Conclusions: Despite their young age, more than 10% of school children had two CVRFs. Abnormal SBP levels were seen in more than 50%, 20% were overweight, and only 75% had normal waist circumference values.

PALABRAS CLAVE
Riesgo cardiovascular;
Adolescentes;
Índice de masa corporal;
Circunferencia de cintura;
Presión arterial

Factores de riesgo cardiovascular en adolescentes escolarizados (RIVACANGAS)

Resumen
Antecedentes y objetivo: La hipertensión arterial (HTA) en niños y adolescentes y las estrategias de prevención cardiovascular están poco estudiadas en ese grupo de edad. El objetivo del estudio es conocer los factores de riesgo cardiovascular (RCV) en una muestra de adolescentes.
Sujetos y métodos: Estudio observacional transversal de una muestra de adolescentes de 12 a 17 años (n = 630), realizado entre octubre de 2014 y febrero de 2015 en 4 centros escolares de Cangas do Morrazo (Pontevedra). *Variables sociodemográficas*: edad, sexo, antecedentes personales y familiares de HTA y diabetes (DM). *Variables antropométricas*: índice de masa corporal (IMC) (kg/m^2), perímetro de cintura (cm), índice cintura/talla (ICT); presión arterial sistólica (PAS) y diastólica (PAD) (mmHg).
Resultados: Se seleccionaron 295 mujeres y 335 hombres. Edad media: 13,8 ± 1,4 años. El 68% sin patologías. Patologías relacionadas con RCV: hipercolesterolemia (7,1%), enfermedad cardiovascular (1,7%), HTA (0,8%), diabetes (0,3%). IMC medio: 22,0 ± 3,8, mayor en hombres (22,4 ± 3,8 vs 21,0 ± 3,2; p < 0,01). Sobrepeso (IMC > P85) 23,3%, mayor en mujeres (27,6% vs 19,7%; p < 0,05). Obesidad: 7%. El 63,8% PAS > P90 y el 23,7% PAD > P90.
El perímetro de cintura se correlaciona de forma positiva con la edad (r = 0,1669; p < 0,0001) y es mayor entre los hombres (75,4 ± 10,9 vs 72,9 ± 8,9; p < 0,01). El 27,1% perímetro de cintura >P75 y el 7,5%, >P90. Un total de 84 (13,3%) adolescentes presentaron 2 factores de RCV (sobrepeso + otro).
Conclusiones: Pese a su corta edad, más del 10% de los escolares tiene 2 factores de RCV. Más del 50% presentaron valores anormales de PAS, el 20%, sobrepeso, y casi el 25%, valores anormales de perímetro de cintura.

Introduction

Vascular disease is one of the leading causes of death in industrialized and developing countries.[1] In 2012, three out of every 10 deaths worldwide were caused by cardiovascular disease (CVD). This represents 17.5 million deaths, a number equivalent to deaths caused by AIDS, tuberculosis, malaria, diabetes, cancer, and chronic respiratory diseases together.[2]

A similar situation occurs in Spain where, according to the 2013 national health survey, CVD continues to be the leading cause of death, causing 252 deaths per 100,000 population.[3] CVD, infarction, and angina pectoris are the leading cause of death, but with a 3.9% decrease as compared to the previous year. Except in the Canary Islands, Catalonia, Madrid, Navarre, and the Basque Country, where tumors are the leading cause of death, CVD ranks first in all autonomous communities. Galicia is the second community with more deaths due to those conditions (372.8 per 100,000 population) after Asturias (392.7 per 100,000 population).[4]

Various studies have shown that CVD is a gradual process that starts during the first or second decades of life and eventually causes clinical manifestations at later ages.[1]

According to data from the last three epidemiological studies on obesity conducted in Spain, PAIDOS,[5] RICARDIN,[6] and enKid,[7] body mass index (BMI) is increasing in children since 1984. In children aged 10 years, BMI was 18.1 kg/m^2 in 1984, 18.5 in 1992, and 18.8 in 1998–2000. In children aged 13 years, BMI was 18.4 kg/m^2 in 1984, 20.4 in 1992, and 21.1 in 1998–2000. This increase, similar to that reported in countries such as France or Switzerland,[8] reflects the increase in obesity and overweight in the adolescent population, which is associated to greater cardiovascular risk (CVR).[9] Therefore, intervention in children and adolescents may be decisive to prevent, delay, or modify this group of diseases.[9]

Few studies on CVR in children and adolescents are available in Spain. The most representative European guidelines, such as those of the *European Society of Hypertension* (ESH) and the *European Society of Cardiology* (ESC) for the treatment of high blood pressure (HBP), do not address this age group, despite the fact that the habits and lifestyles that will be maintained throughout the life of an individual are acquired during childhood and adolescence.[9,10]