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Metabolic alterations and weight status in children at 8 years: a prospective cohort study

Isolina Riaño-Galán [1,2,3]; Ana Fernández-Somoano[3,4]; Ana Cristina Rodríguez-Dehli [5]; Rafael Venta [6,7]; Adonina Tardon[3,4]

[1] Pediatric Endocrinology. Hospital Universitario Central de Asturias (HUCA), Oviedo, Spain; [2] Universidad de Oviedo, Spain; [3] Spanish Consortium for Research on Epidemiology and Public Health (CIBERESP), Madrid, Spain; [4] Departamento de Medicina. Universidad de Oviedo, Spain; [5] Pediatria. Hospital Universitario San Agustín, Avilés, Spain, ; [6] Análisis clínicos. Hospital Universitario San Agustín, Avilés, Spain; [7] Departamento de Bioquímica y Biología Molecular. Universidad de Oviedo, Spain

BACKGROUND

Prevalence of childhood obesity (OB) represents a major public health concern, given the tracking of body weight from childhood to adult age and obesity-related morbidity

Mother and Child (Oviedo)

OBJECTIVE

To describe prevalence of overweight (OW) and OB in children at 8 years and investigate relationship with metabolic alterations (lipid profile and insulin resistance)

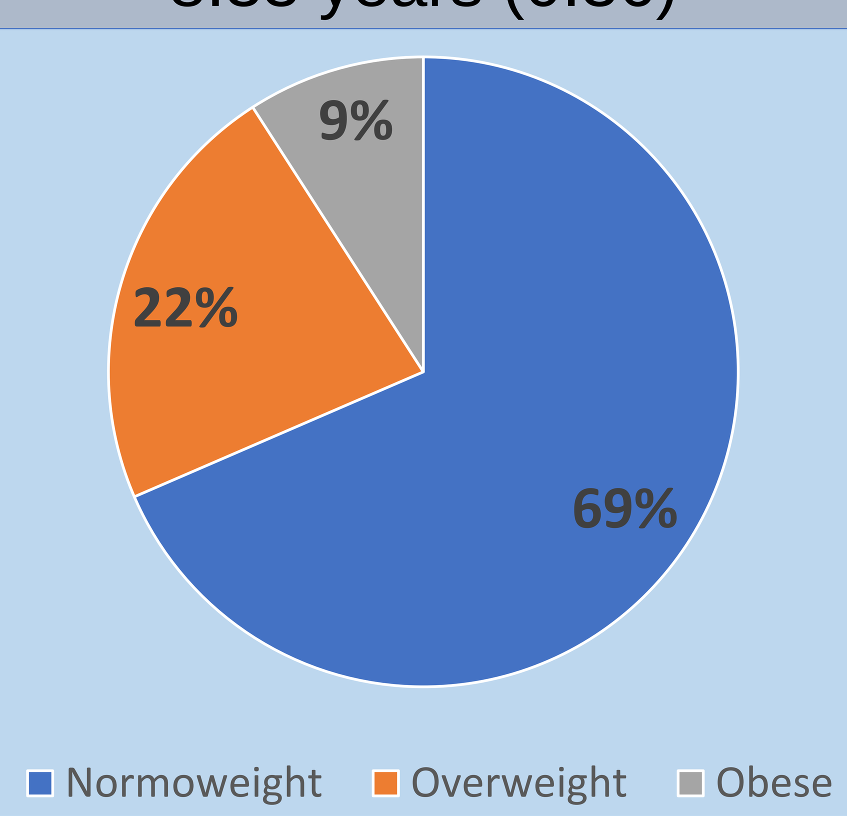
MATERIAL AND METHODS

485 pregnant mothers recruited between 2004-2007 and 409 children from the Spanish population-based cohort study Environment and Childhood [INfancia y Medio Ambiente] Project (INMA). Research protocol was approved by the Ethics Committee. We analysed body mass index (BMI), waist circumference (WC) and body composition (by electrical bioimpedance) at 8 years. We classified as overweight (OW) and obesity (OB) according to IOTF.

Plasma total cholesterol (TotalCHOL), triglycerides (TG), cHDL, LDL, glycaemia and insulin were determined in children. Lipid ratios (ln (TG/ cHDL); LDL/HDL; totalCHOL/cHDL) and HOMA index were calculated. A proatherogenic lipid profile was defined as having the three lipid ratios in the third tertile

RESULTS

362 children (170 girls)
8.33 years (0.36)



31.5% OW + obesity

		Boys	Girls	Total
		N (%)	N (%)	N (%)
BMI	Normal	138 (71.9)	110 (64.7)	248 (68.5)
	Overweight	39 (20.3)	42 (24.7)	81 (22.4)
	Obesity	15 (7.8)	18 (10.6)	33 (9.1)
WC	<P90	153 (79.7)	107 (62.9)	260 (71.8)
	>=P90	39 (20.3)	63 (37.1)	102 (28.2)
WC / Height	Normal	54 (28.1)	32 (18.8)	86 (23.8)
	Overweight	85 (44.3)	64 (37.6)	149 (41.2)
	Obesity	53 (27.8)	74 (43.5)	127 (35.1)
% Body fat	<25%	124 (73.4)	102 (65.8)	226 (69.8)
	>=25%	45 (26.6)	53 (34.2)	98 (30.2)

There is a **positive relation between BMI and HOMA at 8 years**: normoweight 2.12; OW 2.78; OB 5.62. (p-trend <0.001)

45 children (17.9%) had a proatherogenic lipid profile

The **risk of a proatherogenic lipid profile** was increased **5.51-fold (95% CI 2.77-10.96)** if they were **OW/obese**, **4.63-fold (95% CI 2.36-9.09)** if the **WC was higher P90** and **5.32-fold (95% CI 2.56-11.07)** if **fat percentage higher than 25%**

CONCLUSIONS

High prevalence of OW and OB at 8 years were found

There is positive correlation among weight status, central obesity or body fat and HOMA index or lipid profile.

Being OW or obese in childhood may have an unfavourable cardio metabolic profile who need early intervention to promote healthier lifestyles and to prevent cardiovascular disease in adulthood.

Authors: nothing to declare