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SPECIAL ARTICLE

Recommendations of the Spanish Paediatric Endocrinology Society Working Group on Obesity on eating habits for the prevention of obesity and cardiovascular risk factors in childhood☆

E. Palomo Atance[a,*], P. Bahíllo Curieses[b], G. Bueno Lozano[c], A. Feliu Rovira[d], M. Gil-Campos[e], A.M. Lechuga-Sancho[f], R. Ruiz Cano[g], A. Vela Desojo[h]

[a] *Unidad de Endocrinología Pediátrica, Hospital General Universitario de Ciudad Real, Ciudad Real, Spain*
[b] *Unidad de Endocrinología Pediátrica, Hospital Clínico Universitario de Valladolid, Valladolid, Spain*
[c] *Unidad de Endocrinología Pediátrica, Hospital Clínico Universitario Lozano Blesa, Zaragoza, Spain*
[d] *Unidad de Endocrinología Pediátrica, Hospital Universitario Sant Joan de Reus, Reus, Tarragona, Spain*
[e] *Unidad de Metabolismo Infantil, Hospital Universitario Reina Sofía – IMIBIC, Universidad de Córdoba, Córdoba, Spain*
[f] *Departamento Materno Infantil y Radiología, U.G.C. de Pediatría, Hospital Universitario Puerta del Mar, Universidad de Cádiz, Cádiz, Spain*
[g] *Unidad de Endocrinología Pediátrica, Complejo Hospitalario Universitario de Albacete, Albacete, Spain*
[h] *Unidad de Endocrinología Pediátrica, Hospital Universitario de Cruces Baracaldo, Vizcaya, Spain*

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Abstract Childhood obesity is associated with a high risk of cardiovascular disease and early mortality. This paper summarises the currently available evidence on the implications of dietary factors on the development and prevention of obesity in paediatric patients. Evidence-based recommendations are: promote the consumption of slowly absorbed carbohydrates and reduce those with a high-glycaemic-index, avoid intake of sugar-sweetened beverages. Fat may provide up to 30–35% of the daily energy intake and saturated fat should provide no more than 10% of daily energy intake; reduce cholesterol intake, avoid formula milk with a high protein content during the first year; promote higher fibre content in the diet, reduce sodium intake, and have at least four meals a day, avoiding regular consumption of fast food and snacks.

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* Corresponding author.
E-mail address: palomo.enrique@gmail.com (E. Palomo Atance).

PALABRAS CLAVE
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Recomendaciones del Grupo de Trabajo de Obesidad de la Sociedad Española de Endocrinología Pediátrica sobre hábitos de alimentación para la prevención de la obesidad y los factores de riesgo cardiovascular en la infancia

Resumen La obesidad infantil determina un riesgo elevado de enfermedad cardiovascular. Este artículo realiza una actualización sobre el papel que los factores dietéticos tienen sobre el desarrollo y la prevención de la obesidad en este grupo de edad. Según la evidencia científica, las recomendaciones recogidas son: promover el consumo de hidratos de carbono de absorción lenta y disminuir aquellos con índice glucémico alto, evitar el consumo de bebidas azucaradas, limitar el consumo de grasas a un 30% de las calorías totales diarias y el de grasas saturadas a un 7-10%, reducir la ingesta de colesterol, evitar durante el primer año las fórmulas con alto contenido proteico, aumentar la ingesta de fibra, reducir el aporte de sodio y realizar al menos 4 comidas al día evitando el consumo regular de comida rápida y de snacks.

Introduction

When it comes to the prevention of childhood obesity, there is evidence that interventions consisting of dietary measures result in a mild reduction in body mass index (BMI).[1] For this reason, this article of the Obesity Working Group of the Sociedad Española de Endocrinología Pediátrica (Spanish Association of Paediatric Endocrinology) aims at establishing evidence-based recommendations on energy balance, consumption of macro- and micronutrients, and dietary patterns for their application in everyday clinical practice.

Energy balance

In the paediatric age group, energy intake must fit the requirements for adequate growth. Energy balance plays an essential role in the development of obesity, and while it is influenced by various factors, these are often difficult to measure.[2] Based on equations for estimating calorie requirements, we have estimated energy requirements by age, sex and activity level (Table 1).[3] In this regard, a sustained positive energy balance of 70–160 kcal/day has been documented in paediatric patients with progressive weight gain, which suggests that small dietary and lifestyle changes would suffice to prevent weight gain in this population.[4]

Macronutrients

Carbohydrates

Rapidly absorbed carbohydrates (CHOs) may be associated with adiposity development, whereas slowly absorbed (low-glycaemic index) CHOs are not.[2] Thus, it has been observed that a diet rich in low-glycaemic index CHOs can achieve a reduction in waist circumference, HOMA (homeostasis model assessment) indices, BMI and triglyceride levels, and that the decrease in BMI is significantly greater than that achieved with a diet rich in high-glycaemic index CHOs.[3] This effect on insulin resistance markers could contribute to reducing the risk of metabolic syndrome in obese children and youth.

Similarly, there is evidence that intake of slowly absorbed CHOs is associated with lower concentrations of C-reactive protein (CRP) and interleukin 6,[5] both of which are involved in the low-grade inflammation associated with obesity. On the other hand, it has also been observed that rapidly absorbed CHOs produce a lesser satiety than slowly absorbed CHOs in obese as well as normal-weight individuals.[6]

As for sugary drinks, it has been demonstrated that avoiding their consumption and replacing them with water or sugar-free drinks prevents weight gain in obese individuals, although the effect is very small on their normal-weight peers.[7] Furthermore, there is evidence that children that habitually consume sugary drinks between meals have significantly higher weights than children that do not consume them.[7]

Lipids

Lipids are the macronutrients that contribute the most to a positive energy balance, as they carry double the energy than the same amount of proteins or CHOs, and the energy cost of storing lipids is a tenth of the cost of storing CHOs or proteins.

Higher consumption of fats in the paediatric age group is associated with increases in body weight and fat mass.[2] In the first six months of life, lipids contribute 40–60% of the total calories, and their intake must be reduced gradually between ages 6 months and 3 years,[8] after which it is recommended that lipids do not contribute more than 30% of the total calories, restricting saturated fats to 7–10% of the total energy intake and the cholesterol intake to a maximum of 300 mg/day.[2,8] The remaining 20% of the energy contributed by lipids must come from monounsaturated and polyunsaturated fats, avoiding consumption of trans fats.[3] These measures have been associated with a reduction in overall cholesterol, low-density-lipoprotein (LDL) cholesterol, body weight and various insulin resistance markers.[9] Similarly, it has been observed that in infants aged 6–12 months, a lower intake of saturated fatty acids combined with an increase in polyunsaturated fatty acids results in lower overall and