

Dietary energy density (ED) in Irish children aged 1 to 4 years

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Few data are available investigating the ED of the diets of pre-school children. The aim of this paper was to use data from the Irish National Pre-School Nutrition Survey to determine nutrients and foods associated with dietary ED in 1–4 year old children ($n = 500$). Food intake data collected by a 4 day weighed food record were analysed using a modified version of WISP[®] (Tinuviel Software, Anglesey, UK) containing *McCance and Widdowson's The Composition of Foods, 6th Edition*⁽¹⁾ and the Irish Food Composition Database⁽²⁾.

Mean dietary ED (kcal/g) was calculated including (a) food only (1.53 kcal/g), (b) food & milk (1.24 kcal/g), (c) food, milk & fruit juices (1.19 kcal/g) (d) food and beverages >5 kcal/100 g (1.13 kcal/g) and (e) food and all beverages (0.92 kcal/g). For all methods, dietary ED increased with age from 1–4 years. Children were classified by tertile of their dietary ED (calculated using food and all beverages), stratified by age. Mean daily intakes of energy and (energy adjusted) nutrients and foods by tertile of dietary ED are reported.

	Dietary Energy Density			P value
	Low ($n = 166$)	Medium ($n = 168$)	High ($n = 166$)	
Weight of food (g)	619	601	587	0.585
Weight of beverages (g)	847	681	507	0.000
Energy (kcal)	1071	1145	1188	0.000
Protein (%TE)	15.4	15.2	15.0	0.343
Fat (%TE)	31.2	33.3	33.6	0.000
Saturated fat (%TE)	14.4	14.8	15.4	0.021
Carbohydrate (% TE)	50.8	49.0	48.3	0.000
Total sugars (%TE)	27.2	25.3	23.1	0.000
Non-milk sugars (%TE)	20.5	18.3	17.6	0.000
Dietary Fibre (g/1000 kcal)	11.2	10.5	9.5	0.000
Food Groups (g/1000 kcal)				
White bread	17.6	18.3	26.1	0.000
Ready-to-eat breakfast cereals	23.1	18.4	14.3	0.272
Total milk	300	305	228	0.001
Yoghurts and fromage frais	58.0	54.0	56.5	0.737
Potatoes	39.0	33.1	37.7	0.155
Fruit and juices	191	170	126	0.000
Vegetables and vegetable dishes	39.7	34.2	26.8	0.006
Total meat	72.0	73.0	64.0	0.083
Biscuits and cakes	13.2	12.9	17.7	0.002
Carbonated beverages (non-diet)	9.5	6.7	6.0	0.875
Confectionary and savoury snacks	10.3	11.9	12.7	0.161

Children with lower ED diets compared with those with high ED diets consumed a similar amount of food (weight) but more beverages. They consumed less total energy and energy from fat (total and saturated) and more energy from carbohydrates and sugars (total and non-milk) and had more fibre dense diets. Their diet was higher in 'vegetables (including dishes)', 'fruit (including juices)' and milk and lower in white bread and 'biscuits and cakes'. On examination of the ED of the diet calculated using 'food only', all of the fore-mentioned associations still remained; furthermore lower ED diets were then also associated with higher intakes of yoghurts and ready-to-eat breakfast cereals, lower intakes of 'confectionary and savoury snacks' and non-diet carbonated beverages and a higher intake of protein.

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1. Food Standards Agency (2002) *The Composition of Foods* 6th edition.
2. Black LJ, Ireland J, Møller A *et al.* (2011) *J Food Comp Anal* **24**, 1017–23.