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Food portion sizes and their relationship with dietary energy density in Irish adults

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Reduction in portion size, particularly for energy-dense foods, to reduce energy intake and help tackle the obesity epidemic is increasingly addressed in healthy eating guidelines. The current work aimed to describe relationships between the portion sizes of a range of foods commonly consumed by Irish adults (18–64y; *n* 1274) and dietary energy density (DED) on the days the foods were consumed.

The Irish National Adult Nutrition Survey (NANS) [2008–2010] used a 4-day semi-weighed food record to collect dietary intake data from a representative sample of Irish adults. Nutrient intakes were estimated using WISP (Tinuviel Software, Anglesey, UK) which contains data from McCance and Widdowson's *The Composition of Foods*, 6th Edition⁽¹⁾. For the current work, portion size (g) was defined as the weight of food consumed per eating occasion, and was estimated for each day the food was consumed. Where a food was consumed on more than one occasion on one day, the largest portion size was assigned. Portion size data were split by tertile, stratified by gender and age as appropriate. Mean values for DED (kJ/g) were examined across tertiles for the days on which the foods were consumed.

	DED (kJ/g)				Median portion weights per tertile (g)
	T1	T2	T3		
White bread & rolls	7.59 ^a	8.01 ^b	8.36 ^c	↑	50, 76, 125
Brown bread & rolls	7.02	7.25	7.26		48, 76, 114
Boiled potatoes	6.66 ^a	6.50 ^a	6.11 ^b	↓	112, 181, 280
Ready-to-eat breakfast cereals	7.58 ^a	7.51 ^a	8.10 ^b	↑	30, 45, 72
Fruit, excluding dried fruit	6.92 ^a	6.37 ^b	5.83 ^c	↓	80, 130, 188
Vegetables, excluding pulses	7.71 ^a	6.92 ^b	6.23 ^c	↓	32, 67, 116
Baked beans	7.85 ^a	7.33 ^{ab}	6.92 ^b	↓	62, 120, 205
Frying meats (sausages, bacon)	7.63 ^a	8.26 ^b	8.59 ^b	↑	30, 50, 106
Filletts of fish, uncoated	6.66	6.23	6.27		71, 126, 200
Cheese	7.41 ^a	7.74 ^b	8.08 ^c	↑	20, 36, 60
Butter & spreads >59 % fat	7.30 ^a	7.70 ^b	8.21 ^c	↑	6, 12, 24
Low-fat spreads <38 % fat	6.72	7.10	7.21		8, 12, 24
Biscuits	7.09 ^a	7.51 ^b	8.12 ^c	↑	18, 30, 52
Chocolate confectionary	7.51 ^a	7.97 ^b	8.42 ^c	↑	18, 35, 56
Sugary sweets	7.15	7.68	8.33		8, 28, 54
Sugar-sweetened beverages	7.97 ^a	8.63 ^b	8.53 ^b	↑	200, 330, 500

T1, T2 and T3 describe mean values for DED in each of the small (T1), medium (T2) and large (T3) portion size tertiles. ↑ denotes a significant increase in DED with increasing portion size, ↓ denotes a significant decrease. Significance accepted at the level of *p* < 0.05.

DED was higher on the days larger portions of white bread, ready-to-eat breakfast cereals, frying meats, cheese, butter, biscuits, chocolate and sugar-sweetened beverages were consumed, and lower on the days larger portions of boiled potatoes, fruit, vegetables and baked beans were consumed. Findings are consistent with other studies that show high energy-density diets in adults to be characterised by lower fruit and vegetable intake, and higher intakes of energy-dense nutrient-poor foods^(2,3). The findings provide an evidence base from which more specific portion size guidance may be developed for Irish adults, particularly if considered in conjunction with previously published data on the typical portion weights of foods consumed by this group⁽⁴⁾.

1. Food Standards Agency (2002) McCance & Widdowson's *The Composition of Foods*, 6th Ed. Cambridge: Royal Society of Chemistry.
2. Kant AK & Graubard BI (2005) *Int J Obes* 29, 950–956.
3. Ledikwe J, Blanck H, Kettel-Khan L *et al.* (2006) *J Am Diet Assoc* 106(8), 1172–1180.
4. Lyons J & Giltinan M (2013) *The Irish Food Portion Sizes Database*. www.iuna.net