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Low dietary energy density is associated with high dietary quality in Irish adults

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Low dietary energy density (DED) has been associated with higher dietary quality. The objective of this analysis was to examine the dietary quality of Irish adults with low, medium or high DED using data from the National Adult Nutrition Survey (NANS) (<http://www.iuna.net>).

Dietary intake data were analysed using WISP© (Tinuviel Software, Anglesey, UK) that contains McCance and Widdowson's *The Composition of Foods*, 6th edition⁽¹⁾. DED (kJ/g) was calculated using food only, excluding all beverages. Participants were stratified by gender and age and separated by tertile of DED into categories of low, medium and high DED. The mean daily intakes (MDI) of food, macronutrients, dietary fibre and micronutrients were examined across tertile of DED.

MDI of energy, macronutrient, dietary fibre and wt. of food consumed, by tertile of DED in Irish adults

	Low (n = 499) 5.48		Medium (n = 502) 7.07		High (n = 499) 8.83		p-value*
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Mean DED (kJ/g)							
Wt. food ex. beverages (g)	1262 ^a	411	1038 ^b	300	887 ^c	276	0.000 ↓
Energy (kcal)	1864 ^a	608	2028 ^b	644	2150 ^c	686	0.000 ↑
Protein (%TE)	18.5 ^a	4.2	17.2 ^b	3.3	15.5 ^c	3.0	0.000 ↓
Fat (%TE)	32.1 ^a	5.9	34.4 ^b	5.7	37.5 ^c	5.9	0.000 ↑
Saturated fat (%TE)	11.6 ^a	3.2	12.8 ^b	3.1	14.4 ^c	3.4	0.000 ↑
Carbohydrate (%TE)	44.0 ^a	7.0	42.9 ^b	6.7	41.7 ^c	6.8	0.000 ↓
Total sugar (%TE)	18.1 ^a	5.8	16.4 ^b	5.4	16.0 ^b	5.9	0.000 ↓
Dietary fibre (g/10 MJ)	27.7 ^a	8.7	23.0 ^b	6.7	19.2 ^c	6.0	0.000 ↓
Vitamin A (µg/10 MJ)	1940 ^a	2067	1294 ^b	945	1023 ^c	1046	0.000 ↓
Vitamin D (mg/10 MJ)	8.6 ^a	13.9	5.0 ^b	5.1	4.1 ^c	4.9	0.000 ↓
Vitamin E (mg/10 MJ)	22.8 ^a	58.5	12.2 ^b	13.0	10.4 ^c	7.4	0.000 ↓
Thiamin (mg/10 MJ)	6.2 ^a	17.3	2.8 ^b	5.3	2.2 ^c	3.5	0.000 ↓
Riboflavin (mg/10 MJ)	6.1 ^a	16.4	3.0 ^b	5.2	2.4 ^c	3.0	0.000 ↓
Niacin Equivalents (mg/10 MJ)	65.9 ^a	53.1	52.4 ^b	14.2	46.4 ^c	14.5	0.000 ↓
Vitamin B6 (mg/10 MJ)	7.9 ^a	20.9	4.0 ^b	5.4	3.4 ^c	4.5	0.000 ↓
Vitamin B12 (mg/10 MJ)	13.9 ^a	59.8	7.3 ^b	6.5	6.3 ^c	4.4	0.000 ↓
Folate (µg/10MJ)	567 ^a	616	475 ^b	1036	362 ^c	176	0.000 ↓
Vitamin C (mg/10 MJ)	259.7 ^a	473.7	135.3 ^b	197.6	75.7 ^c	72.6	0.000 ↓
Calcium (mg/10 MJ)	1266 ^a	569	1113 ^b	349	1046 ^c	353	0.000 ↓
Magnesium (mg/10 MJ)	410 ^a	126	342 ^b	65	301 ^c	66	0.000 ↓
Iron (mg/10 MJ)	22.0 ^a	30.0	16.9 ^b	18.1	14.6 ^c	13.9	0.000 ↓
Sodium (mg/10 MJ)	3150	889	3171	708	3172	700	0.214
Potassium (mg/10 MJ)	4232 ^a	983	3655 ^b	596	3209 ^c	614	0.000 ↓
Zinc (mg/10 MJ)	15.7 ^a	14.9	12.0 ^b	4.3	10.4 ^c	3.3	0.000 ↓

Low DED was associated with higher intakes of protein, carbohydrates, dietary fibre, vitamins and minerals and lower intakes of fat and saturated fat. This analysis shows that a low energy dense diet is associated with higher dietary quality.

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1. Food Standards Agency (2002) *McCance and Widdowson's The Composition of Foods* 6th ed. Cambridge: Royal Society of Chemistry.