An exploration of the dietary patterns of a representative sample of Irish adults

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Traditionally, epidemiological dietary research has focused on evaluating single nutrient intakes. In recent years, research has moved towards analysing dietary intakes associated with groups of foods using techniques such as dietary pattern analysis[1]. The aim of this research was to identify dietary patterns in a representative sample of Irish adults, using cluster analysis, where patterns are based on differences in dietary intakes among individuals[2]. The National Adult Nutrition Survey (NANS)[3] that consists of food intake data for 1500 adults, aged 18 + years, was used for this analysis. In the NANS, a semi-weighed 4-d food diary was used to collect information on all foods and beverages consumed. For this analysis, food intake data was reduced to thirty-three food groups. For each subject, their food group intakes were expressed as the percentage contribution to total energy intake (%TE) and corresponding z-scores were calculated. K-means cluster analysis was conducted on these standardised variables to derive patterns of dietary intake.

	Cluster 1		Cluster 2		Cluster 3		Cluster 4		Cluster 5		Cluster 6	
n	*273*		*204*		*264*		*195*		*295*		*252*	
M:F (%)	38:62		56:44		59:41		49:51		64:36		29:71	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Age (years)	38.9	14.7	48.4	17.2	55.0	15.4	41.8	15.3	33.8	13.7	50.8	15.8
BMI (kg/m2)	26.2	4.60	27.63	5.54	27.83	4.61	26.89	4.18	26.79	4.75	27.10	5.72
Energy (MJ)	8.77^a	2.76	8.53^{ab}	2.86	7.88b	2.30	8.40^{ab}	2.65	9.60^{ac}	2.91	7.21^b	2.15
Protein (%TE)	15.74^a	2.85	15.75^a	2.91	18.58^{bc}	3.29	17.80^c	3.36	15.58^a	3.27	18.35^{bc}	3.66
CHO (%TE)	47.05^a	6.00	44.90^b	6.66	46.35^{ab}	6.60	47.52^a	7.18	40.89^c	7.13	48.00^a	7.17
Fat (%TE)	35.67^a	5.03	39.23^b	6.32	33.86^c	5.68	32.84^{cd}	5.80	33.98^c	6.15	32.42^d	6.16
Alcohol (%TE)	3.66^a	4.65	2.18^b	3.87	3.24^{ab}	5.44	3.95^a	4.74	11.54^c	9.12	3.30^a	4.71
Sugar (g)	53.22^a	33.65	47.11^{ab}	33.13	34.26^{cd}	26.14	33.87^d	24.01	48.80^{bce}	35.16	28.34^{df}	19.02
Calcium (mg)	940.95^a	373.61	947.83^a	429.76	876.11^{ab}	352.67	920.73^a	363.11	861.62^b	343.98	852.61^a	355.53
Iron (mg)	12.57^a	4.90	10.45^b	4.25	12.34^a	4.84	12.75^a	5.25	11.89^b	4.88	11.81^a	5.00

M, male; F, female; CHO, carbohydrate. The distribution of the dataset was checked for normality and transformed to give normal distribution as appropriate. [abcdef] Superscript letters denote a statistically significant difference between indicated clusters using General Linear Model adjusted for gender and age as appropriate.

Six distinct clusters were identified. Cluster 1 was characterised by a higher energy contribution from savoury snacks, red meat dishes and confectionary. Cluster 2 was characterised by a higher energy contribution from white bread, whole milk, butters and sugars and a lower energy contribution from alcoholic beverages. Cluster 3 was characterised by a higher energy contribution from low fat spreads, potatoes and red meat and a lower energy contribution from confectionary. Cluster 4 was characterised by a higher energy contribution from rice and pasta and poultry dishes. Cluster 5 was characterised by a higher energy contribution from savouries, chips and processed potatoes, meat products, alcoholic and high energy beverages and a lower energy contribution from breakfast cereals and biscuits. Cluster 6 was characterised by a higher energy contribution from yoghurts, vegetables, fruit, fish and poultry.

This research identifies six patterns of similar food intake in a large population. However, further research should consider how the clusters should be interpreted and whether dietary patterns identified differ according to age.

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2. Michels KB & Schulze MB (2005) *Nutr Res Rev* **18**, 241–248.
3. Irish Universities Nutrition Alliance (2011) *The National Adult Nutrition Survey*. http://www.iuna.net/