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Coffee consumption and cardiometabolic health in UK adults: cross-sectional analysis of the National Diet and Nutrition Survey

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Extensive research has been conducted to examine the relationship between coffee consumption and a wide range of chronic diseases[(1)]. Links between coffee consumption and cardiometabolic health have been widely reported in the literature but with equivocal results[(2–4)]. The present analysis explored coffee consumption in UK adults and examined associations with markers of cardiometabolic health.

Anonymised cross-sectional data from the UK National Diet and Nutrition Survey (NDNS)* were obtained[(5)] for 2,147 adults (945M; 1,229 F) aged ⩾18y. Using data from food diaries, coffee consumers were defined as those reporting consumption of any type of coffee (e.g. filtered/instant; caffeinated/decaffeinated) on ⩾1 occasion throughout the recording period. Markers of cardiometabolic health included physical characteristics [body mass index (BMI); blood pressure] and blood analytes [lipids; haemoglobin-A1c; homocysteine; C-reactive protein (CRP)].

Overall, there were 1,325 and 849 coffee consumers and non-consumers, respectively. Of the coffee consumers, over half (*n* 818; 62 %) were defined as low consumers (<2 times/day), compared to only 400 (30 %) moderate and 107 (8 %) high consumers (2–4 and >4 times/day, respectively). Instant coffee was the most frequently consumed. Mann-Whitney U tests revealed that coffee consumers were significantly older and had significantly higher BMI, blood pressure, total and LDL cholesterol concentrations compared to non-consumers.

	Non-coffee consumers (*n* 849)				Coffee consumers (*n* 1325)				
	n	Median	P25	P75	*n*	Median	P25	P75	*P**
Age (y)	849	41	27	57	1325	50	38	63	**<0·001**
BMI (kg/m^2)	775	26·4	23·0	30·0	1216	27·0	23·9	30·8	**0·001**
SBP (mmHg)	484	122	114	135	785	127	116	137	**0·002**
DBP (mmHg)	484	71	65	80	785	75	68	82	**<0·001**
TC (mmol/L)	380	4·9	4·2	5·7	673	5·3	4·6	6·1	**<0·001****
TG (mmol/L)	377	1·0	0·7	1·5	672	1·1	0·8	1·6	0·003
HDL (mmol/L)	380	1·4	1·2	1·7	673	1·5	1·2	1·8	0·257
LDL (mmol/L)	369	2·9	2·3	3·5	662	3·2	2·5	3·9	**<0·001****
CRP (mg/L)	380	2·1	1·4	3·8	674	1·9	1·2	3·5	0·021
Hcy (μmol/L)	367	9·1	7·4	11·3	657	9·2	7·7	11·2	0·339
HbA1c (%)	375	5·5	5·2	5·8	661	5·6	5·3	5·8	0·034

BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; TC, total cholesterol; TG, triglycerides; HDL, high density lipoproteins; LDL, low density lipoproteins; CRP, C-reactive protein; Hcy, homocysteine; HbA1c, haemoglobin-A1c. *Difference between groups (Mann whitney-U: $P < 0{\cdot}0025$ Bonferroni corrected). **Remained significant after adjusting for age, sex, weight and energy intake (ANCOVA: $P < 0{\cdot}002$).

After adjusting for age, sex, weight and energy intake, a significant difference in total and LDL cholesterol concentrations remained between coffee consumers and non-consumers. The same result was observed in males (18–64y) but not in those older than 64y. Coffee consumption was not associated with haemoglobin-A1c, homocysteine or CRP in any analysis. Markers of cardiometabolic health were not different between low, moderate and high coffee consumers.

The higher cholesterol concentrations amongst coffee drinkers in this cross-sectional study could be driven by the well-known cholesterol-raising effect of unfiltered coffee consumption[(6)], even though the population was largely made up of consumers of instant coffee. Nevertheless, no association of cholesterol or any other marker with frequency of consumption was observed among coffee consumers.

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