

## Dietary fat intake and blood pressure in 10 to 19 years adolescents in the United Kingdom

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Studies supported that total fat intake was associated with increased risks of hypertension, but as a subgroup of fat, n-3 polyunsaturated fatty acid (PUFA) intake had association with reduced risk of hypertension<sup>(1)</sup>. Relevant studies in adolescents are lacking, although the prevalence of hypertension among adolescents is high and is increasing<sup>(2)</sup>, and elevated blood pressure in youth is a strong predictor of hypertension in adulthood<sup>(3)</sup>. The aim of this study is to determine the relationship between dietary fat intake and blood pressure in 10–19 years UK adolescents.

A sample of 585 10–19 years old adolescents were selected from the UK National Diet and Nutrient Survey in which participants were drawn randomly. General information, anthropometric and blood pressure (BP) were collected, and dietary data was assessed from a four-day food record. BP data was transformed to systolic BP Z-scores (SBPZ) and diastolic BP Z-scores (DBPZ)<sup>(4)</sup>. Univariable and multivariable linear regression was undertaken for BP/BPZ-scores). Age, gender, weight, height, alcohol intake, smoking, sodium intake and energy intake were adjusted in models.

Rate of hypertensive participants was 7.2 %. Every 1 g increase in n3-PUFA intake was associated with 3.49 mmHg decreased DBP (95 %CI: -6.86 to -0.12, p = 0.042), but not related with SBP or Z-scores. Every 1 g polyunsaturated low fat spread intake was related with 0.86 mmHg (95 %CI: -1.61 to -0.12, p = 0.024) reduced DBP and 0.035 (95 %CI: -0.06 to -0.01, p = 0.019) reduced DBPZ, but not with SBP or SBPZ. No statistically significant association was found between total/other subgroup of fat intake and blood pressure values/Z-scores.

Nutrients	Change in BP per unit change in exposure			
	Coefficient	95 %CI		P value (*p < 0.05)
<b>With systolic blood pressure</b>				
Low fat spread not polyunsaturated (g)	0.045	-2.295	2.385	0.97
Low fat spread polyunsaturated (g)	-1.281	-2.566	0.004	0.051
Cis n-3 fatty acids (g)	-5.434	-11.256	0.387	0.067
Cis n-6 fatty acids (g)	-1.456	-3.018	0.105	0.067
<b>With diastolic blood pressure</b>				
Low fat spread not polyunsaturated (g)	0.174	-1.179	1.528	0.801
Low fat spread polyunsaturated (g)	-0.858	-1.601	-0.115	0.024*
Cis n-3 fatty acids (g)	-3.488	-6.855	-0.121	0.042*
Cis n-6 fatty acids (g)	-0.783	-1.687	0.121	0.089
<b>With systolic blood pressure Z-scores</b>				
Low fat spread not polyunsaturated (g)	0.003	-0.065	0.07	0.94
Low fat spread polyunsaturated (g)	0.002	-0.02	0.025	0.843
Cis n-3 fatty acids (g)	-0.072	-0.196	0.052	0.255
Cis n-6 fatty acids (g)	-0.01	-0.041	0.021	0.523
<b>With diastolic blood pressure Z-scores</b>				
Low fat spread not polyunsaturated (g)	0.023	-0.047	0.093	0.517
Low fat spread polyunsaturated (g)	-0.035	-0.064	-0.006	0.019*
Cis n-3 fatty acids (g)	-0.107	-0.227	0.013	0.079
Cis n-6 fatty acids (g)	-0.008	-0.038	0.022	0.616

In NDNS adolescent population, dietary n3-PUFA intake was associated with reduced DBP, and dietary polyunsaturated low fat spread intake was associated with DBP and DBPZ.

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3. Sun SS, Grave GD, Siervogel RM *et al.* (2007) *Pediatrics* **119**, 237–246.
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