



Winter Meeting, 4–5 December 2018, Optimal diet and lifestyle strategies for the management of cardio-metabolic risk

Vegetarian diets and risk of diabetes in British adults: results from the EPIC-Oxford study

K. Papier¹, P. N. Appleby¹, G.K. Fensom¹, A. Knuppel¹, A. Perez-Cornago¹, J.A. Schmidt¹, T.Y.N. Tong¹ and T.J. Key¹

¹Cancer Epidemiology Unit, Nuffield Department of Population Health, University of Oxford, Oxford, OX3 7LF

The number of people affected by diabetes globally is rapidly increasing with estimates already surpassing 425 million in 2017 and projected to reach 629 million in 2045 ⁽¹⁾. A few small studies have found that vegetarians might have a lower risk of diabetes than non-vegetarians but they have been limited by small numbers of cases ^(2, 3, 4, 5). Therefore, we examined the association between vegetarianism and diabetes risk in a large, prospective study of British adults

The analysed cohort included participants from the European Prospective Investigation into Cancer (EPIC)-Oxford study who were diabetes free at recruitment (1993-1999), with available dietary intake data at baseline, and linked hospital admissions and death data for diabetes over follow-up (1994-2016) (n = 45,314)⁽⁶⁾. Participants were categorized as regular meat eaters (≥50 grams per day: n = 15,181); low meat eaters (<50 grams of meat per day: n = 7,615); fish eaters (ate no meat but consumed fish: n = 7,092); and vegetarians and vegans (ate no meat or fish: n = 15,426). We used multivariable Cox proportional hazards models to assess associations between diet and risk of diabetes.

Over a mean of 17.6 years of follow-up, 1224 incident cases of diabetes were recorded (11 of which were first noted at death). Compared with regular meat eaters, the low meat eaters, fish eaters, and vegetarians and vegans were less likely to develop diabetes (hazard ratio (HR) = 0.63, 95 % confidence interval (CI) 0.54-0.75; HR = 0.47, 95 % CI 0.38-0.59; and HR = 0.63, 95 % CI 0.54-0.74, respectively). These associations were substantially attenuated after adjusting for body mass index (BMI) (low meat eaters: HR = 0.78, 95 % CI 0.66-0.92; fish eaters: HR = 0.64, 95 % CI 0.51-0.80; and vegetarians and vegans: HR = 0.89, 95 % CI 0.76-1.05) (Table 1).

Table 1. Associations between diet group and diabetes incidence in 45,314 EPIC-Oxford participants

Dietary groups	Cases / total at risk	Hazard ratios, 95 % Confidence intervals	
		Model 1	Model 2
Regular meat eaters	691/15181	1	1
Low meat eaters	184/7615	0.63 (0.54 -0.75)	0.78 (0.66 -0.92)
Fish eaters	93/7092	0.47 (0.38 -0.59)	0.64 (0.51 -0.80)
Vegetarians and vegans	256/15426	0.63 (0.54 -0.74)	0.89 (0.76 -1.05)
P-value ¹	–	<0.001	<0.001

Model 1: Analysis stratified by sex, method of recruitment, region of residence and adjusted for age, education, Townsend deprivation index, ethnicity, smoking, alcohol intake, and physical activity. Model 2: Analysis further adjusted for BMI. ¹ Represents significant heterogeneity in risk between diet groups based on likelihood-ratio test statistics.

We found that consuming a low or meat-free diet was associated with a lower risk of diabetes, and that this was at least partly attributable to these groups having a lower BMI than regular meat eaters. Our findings suggest that consuming low-meat or vegetarian diets may have a role in controlling the growing diabetes epidemic.

This work is supported by Wellcome Trust Our Planet Our Health (Livestock, Environment and People, LEAP 205212/Z/16/Z).

1. International Diabetes Federation (2017) IDF Diabetes Atlas 8th Edition
2. Snowdon DA, Phillips RL (1985) *Am J Public Health* 75,507–12
3. Chiu THT, Pan WH, Lin MN *et al.* (2018) *Nutr Diabetes* 8,12
4. Tonstad S, Stewart K, Oda K *et al.* (2013) *Nutr Metab Cardiovasc Dis* 23,292–9
5. Vang A, Singh PN, Lee JW *et al.* (2008) *Ann Nutr Metab* 52, 96–104
6. Crowe FL, Appleby PN, Travis RC *et al.* (2013) *Am J Clin Nutr* 97, 597–603