

**Title: EAT-*Lancet* score and risk of ischemic heart disease, stroke, diabetes and total mortality in British adults: results from the EPIC-Oxford study**

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Earlier this year, the EAT-Lancet Commission on Food, Planet and Health's report defined a universal reference diet to promote human and environmental health.<sup>1</sup> To evaluate its association with the risk of major health outcomes we used data from 46 069 participants enrolled throughout the UK in the European Prospective Investigation into Cancer and Nutrition (EPIC)-Oxford.

Using data from food frequency questionnaires collected between 1993-2001, we created an 'EAT-Lancet score' based on the 14 key recommendations (see Supplementary Table). Participants were assigned a point for meeting each of the recommendations, resulting in possible scores from 0-14. We used multivariable-adjusted Cox proportional hazards models to assess associations between fourths of the EAT-Lancet score and risk of hospitalization or death from ischemic heart disease, stroke and diabetes, and total mortality, ascertained through health record linkage. We repeated analyses with each individual recommendation adjusted for the score (minus itself) to investigate whether one or more of the recommendations were responsible for associations.<sup>2</sup> The EPIC-Oxford study protocol was approved by a Multicentre Research Ethics Committee (Scotland A Research Ethics Committee). All participants provided written informed consent.

High adherence to the EAT-Lancet score was associated with lower risks of ischemic heart disease (28 %) and diabetes (59 %), but was not associated with risk of stroke and not clearly associated with total mortality (results unadjusted for body mass index, Figure 1 shows results without and with adjustment for body mass index). Cross-sectionally, high adherence to the EAT-Lancet score was associated with ~1.5 kg/m<sup>2</sup> units lower body mass index and, in a subsample, with ~0.5 mmol/L lower plasma non-HDL cholesterol and ~3.5 mmHg lower systolic blood pressure compared to low adherence ( $p < 0.001$ ), differences which could mediate the inverse association observed for IHD. No association was explained by one single recommendation, suggesting a cumulative impact, although over 90% of participants achieved the recommendations for eggs, fish, legumes, and fats, suggesting that only a subset of recommendations contributed to the protective association for the score; this consumption pattern might relate to the structure of our cohort which includes a large proportion of vegetarians.<sup>3</sup> Adherence to the EAT-Lancet score might be a marker for healthy lifestyle; therefore residual confounding might operate.

In this large prospective cohort of British adults the EAT-Lancet reference diet shows beneficial associations for ischemic heart disease and diabetes, although no association with stroke and no clear association with mortality.

Declaration of interests: The authors declare that they have no conflict of interest.

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**Figure 1. Prospective associations between EAT-Lancet diet score and incidence of ischemic heart disease (IHD), stroke, diabetes and mortality in EPIC-Oxford after up to 23.6 years of follow-up**

\*Analyses were stratified for sex, method of recruitment and region and adjusted for age as the underlying time variable, age group (20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+), total energy intake, education (no qualifications, basic secondary, higher secondary, university degree, unknown: 6.2%), Townsend deprivation index (quartiles, unknown: 12.8%), alcohol intake (<1 g/day, 1-7 g/day, 8-15 g/day, 16+ g/day), physical activity (inactive, low activity, moderately active, very active, unknown: 10.8%), smoking (never, former, current <10 cigarettes/day, 10-19 cigarettes/day, 20+ cigarettes per day) and in women: hormone replacement therapy use (ever, never, unknown: 24.7%), oral contraceptive use (ever, never, unknown: 24.1%).

\*\*Analyses additionally adjusted for body mass index (<20 kg/m<sup>2</sup>, 20-<22.5 kg/m<sup>2</sup>, 22.5-<25 kg/m<sup>2</sup>, 25-<27.5 kg/m<sup>2</sup>, 27.5-<30 kg/m<sup>2</sup>, 30-<32.5 kg/m<sup>2</sup>, 32.5+ kg/m<sup>2</sup>, unknown: 3.5%) are presented in grey. All covariates were collected using a self-completed questionnaire at baseline.