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Associations between the EAT-Lancet Index, nutrient intake and compliance with UK dietary guidance in UK adults

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The EAT-Lancet Commission has identified a diet that aims to optimise both human health and environmental sustainability, known as the "planetary health diet", which aims to improve the health of the population and meet sustainable food production targets by 2050[(1)]. However, evidence suggests that following the planetary health diet may lead to micronutrient deficiencies associated with a plant-based diet[(2)]. This research explores associations between adherence to the planetary health diet (assessed by the EAT-Lancet Index), habitual diet and adherence to dietary guidance in UK adults.

Data from disease-free UK adults aged ≥18 years (n = 425) was pooled from five cross-sectional analyses that recorded habitual dietary intake using the eNutri food frequency questionnaire (FFQ)[(3)]. Using daily nutrient and food group intakes from eNutri, EAT-Lancet Index scores were calculated[(4)], where higher scores represent greater adherence to the planetary health diet, which were then stratified into quartiles (Q), with the highest scores in Q4. Nutrients of interest were energy, total fat, saturated fats (SFA), protein, carbohydrates and free sugars, (all percentage of total energy (%TE)), long-chain n-3 polyunsaturated fats, fibre, sodium, potassium, calcium, iron, zinc, iodine, selenium, and vitamins B12 and D. ANCOVA (adjusting for sex, age, physical activity, ethnicity, employment status, and body mass index (BMI)) compared nutrient intakes across quartiles. If significant ($p \leq 0.01$), pairwise comparisons with Bonferroni correction identified significant differences between Q1 and Q4 ($p \leq 0.01$ accounting for multiple comparisons; results shown below). Percentages of each quartile group (Q1-Q4) meeting UK dietary guidelines were also calculated and compared using Chi-square tests ($p \leq 0.05$ for significance).

Study participants had a mean (SD) age of 44 (19) years and a BMI of 25.7 (6.0) kg/m2 and 79.6% were female. Compared to Q1, Q4 had lower intakes of energy (-335 kcal/d), SFA (-3.0 %TE), free sugars (-4.2 %TE), sodium (-454 mg/d), and vitamin B12 (-2.2 mg/d) (all $p \leq 0.006$), while intakes of dietary fibre were 8.8 g/d higher ($p < 0.001$). Furthermore, those with the highest EAT-Lancet scores were more likely to meet the UK dietary recommendations for total fat (36.2% in Q4 vs 24.3% in Q1, $p = 0.035$), free sugars (29.5% vs 13.0%, $p = 0.001$), sodium (66.7% vs 46.1%, $p = 0.008$), and potassium (61.9% vs 49.6%, $p = 0.02$).

The highest EAT-Lancet Index scores were associated with more favourable intakes of dietary fibre and lower energy, SFA, free sugars, and sodium, and more participants met the UK dietary recommendations for free sugars and sodium compared with the lowest scores. Although intakes of vitamin B12 were lower with higher EAT-Lancet scores, the percentage of participants consuming the recommended intakes did not differ between quartiles. These findings suggest that greater adherence to the planetary health diet is associated with a more healthful diet that aligns more closely with dietary guidance in UK adults.

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