Consumption of dietary fibre, fruits and vegetables, and fish, is associated with greater food biodiversity in UK diets

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Background and objectives
Dietary species richness (DSR), a metric of food diversity, has been inversely associated with total and cause-specific mortality in European populations. We determined whether i) DSR can be robustly measured based on four-day food intake data, ii) DSR is associated with diet quality, and iii) DSR is dependent on socio-demographic characteristics.

Methods
The NDNS nutrient databank 2018–2019, with data on nutrient composition, was expanded to include data on FoodEx2 food classification, ingredients, the number and identity of unique species, and greenhouse gas emissions. Four-day food intake data and data on age, sex, BMI, ethnicity, Index of Multiple Deprivation (IMD), and household income were obtained from the UK National Diet and Nutrition Survey (NDNS) waves 9–11 (years 2018 to 2019), to calculate dietary quality indicators and DSR on the food and diet level.

Results
We identified 216 unique species across UK diets. On the food level, composite dishes had the highest DSR (median 8 [Q1=4, Q3=12]), followed by seasoning, sauces, and condiments (median 7, [Q1=4, Q3 =10]) and grains and grain-based products (median 5, [Q1=2, Q3=7]). On the dietary level, the median DSR over four days was 49 [Q1=43, Q3=56; range 14 - 92], with the first two days covering 80% of the total DSR measured over four days. DSR was significantly higher in younger age categories and those with a higher household income or higher IMD (all $p<0.001$). A higher DSR was significantly associated with a higher intake of dietary fibre, fruits and vegetables, and fish (all $p<0.001$).

Conclusions
We successfully established DSR in UK diets based on four-day food intake data. We also identified opportunities to increase DSR, for example, by increasing the consumption of fruits and vegetables, fibre, and fish, potentially through composite dishes. More research will be required to further validate the DSR, and to establish the relationships between DSR, individual health outcomes, personalised approaches to increase food biodiversity, and ecological biodiversity impact.

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- MD-K, EZ, and AW are employees of Unilever, a global FMCG company which produces and markets a variety of foods and beverages. The other authors report no conflict of interest.

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