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# Diversity of plant-based food and beverages consumption in the UK adult population: a cross-sectional analysis of the National Diet and Nutrition Survey Year 9

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There is a considerable body of evidence supporting the effects of increasing quantity of plant-based food consumption on health. Recently, there has been interest in the importance of diversity of plant-based food consumption, however, this remains less well understood<sup>(1)</sup>. This study aims to (1) characterize the quantity and diversity of plant-based foods consumed, and (2) determine the association between plant-based food diversity, nutrient intake and demographic characteristics, in a nationally representative UK adult population.

This is a cross-sectional study using the National Diet and Nutrition Survey Year 9 (2016/2017) adult cohort. Participants completed estimated food and drink diaries over four days, which were then analysed to determine the intake of 258 distinct plant-based items within 2,202 discrete and composite foods. Items in all plant food categories (fruits, vegetables, grains, herbs, spices, nuts, seeds, fats, oils and beverages) were included. The mean daily diversity count was calculated by dividing total diversity counts by the number of food-diary days completed. Diversity was categorised into terciles to estimate low, moderate and high plant-based food diversity.

Multivariate regression analyses were conducted to identify predictors of diversity of plant-based food consumption.

Overall, 677 adults were included (58% female, 91% white, 29% with a degree). The median diversity of plant-based food intake was 8 counts/d (IQR 4). Diversity of plant-based food intake was categorised into the following terciles: low (median 5.5, IQR 1.8 counts/d), moderate (median 8.1, IQR 1.3 counts/d), and high diversity (median 11.0, IQR 2.3 counts/d). Vegetables were the largest contributors (22%) to diversity, followed by fats and oils (19%), and fruit (18%). The high diversity tercile had a higher fibre intake, compared to low diversity (median 11.5, IQR 4.9 g/d vs median 9.5 vs 4.0 g/d;  $p < 0.001$ ), and a lower trans fat intake (median 0.5, IQR 0.3 g/d vs median 0.6, IQR 0.4 g/d;  $p = 0.031$ ). Higher annual income (+0.2 diversity counts/d per £5,000 increments, 95% CI 0.1–0.3;  $p < 0.001$ ), higher qualification levels ( $p < 0.001$ ), and following a vegetarian dietary pattern ( $p = 0.008$ ) were significantly associated with higher daily diversity.

This is the first study to characterise plant-food diversity intake in the UK, showing the UK population consumes on average eight different plant foods a day. Higher plant-food diversity is linked to improved nutritional intake, and may offer an alternative strategy to optimise healthy diets. However, this remains to be confirmed in high quality randomised controlled trials, and the potential socio-economic disparities in relation to such a nutritional public health intervention need to be explored.

## Reference

1. Creedon A, Hubbard V, Gibson R *et al.* (2024) Proc Nutr Soc (in press).