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Association between empirically driven dietary patterns and cardiometabolic disease risk factors: A cross-sectional analysis in UK adults

A. Yilmaz¹, M. Weech¹, K.G. Jackson¹ and J.A. Lovegrove¹

¹Hugh Sinclair Unit of Human Nutrition, Institute of Food, Nutrition and Health and Institute for Cardiovascular and Metabolic Research, Department of Food and Nutritional Science, University of Reading, Reading, RG6 6DZ, UK

Extensive research has investigated the impact of individual foods and nutrients on development and progression of cardiometabolic disease (CMD)⁽¹⁾. However, there are only limited data on the influence of overall dietary patterns on CMD within the UK population. Therefore, this analysis aimed to empirically identify dietary patterns and explore their association with CMD risk factors in UK adults.

For this secondary data analysis, habitual dietary data was collated from four randomised controlled trials (DIVAS, DIVAS-2, SATgene, RESET) and one observational study (BODYCON) conducted at the Hugh Sinclair Unit of Human Nutrition, University of Reading. This dietary data was categorised into 38 food groups before performing principal component analysis to identify specific dietary patterns. After stratifying the principal components into increasing quartiles (Q) and determining the eNutri-DQS (a measure of diet quality), ANCOVA was performed to assess variations in estimated marginal means of CMD risk factors and eNutri-DQS between quartiles of dietary pattern adherence.

The dataset included 646 individuals, 58% female with a mean \pm SD age of 44 ± 14 years, and body mass index (BMI) of 25.2 kg/m^2 (SD 4.0). Two main dietary patterns (DP) were identified which explained 11.7% of the total variance of food intake. Higher adherence to DP1 (Q4), characterised by diets rich in fermented dairy, fruits, wholegrains, vegetables and lower in red/processed meat products, was associated with lower BMI, waist circumference, diastolic blood pressure, fasting triacylglycerol, non-high-density lipoprotein (HDL)-cholesterol and higher HDL-cholesterol concentrations compared with the lowest quartile of adherence (Q1) ($P < 0.01$). DP2, characterised by high consumption of sugar, honey and jam and other sweet spreads, refined grains and cereals with lower intakes of vegetables, nuts and wholegrains, was associated with lower HDL-cholesterol concentrations compared to those with lower adherence ($P = 0.006$). Relative to Q1, diet quality, as measured by the eNutri-DQS, was significantly higher across increasing quartiles of adherence to DP1 ($P < 0.001$), whereas the eNutri-DQS was significantly lower in Q4 versus Q1 of DP2 ($P < 0.001$).

This analysis has revealed two main dietary patterns in disease-free UK adults. Greater adherence to a diet higher in fermented dairy, fruits, wholegrains, and vegetables and lower in red and processed meat was associated with a higher diet quality and favourable associations with CMD risk markers.

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Reference

1. Jacobs DR & Tapsell LC (2007) *Nutr Rev* **65**, 439–450.