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Pulse rich diets are associated with a higher nutrient intake in adults: Results from the National Diet and Nutrition Survey years 1–11

O. Olotu[1], Y. Kaimila[1,4], M. Clegg[1,2], K.G. Jackson[1,2,3] and J.A. Lovegrove[1,2,3]
[1]*Hugh Sinclair Unit of Human Nutrition,*
[2]*Institute of Food, Nutrition and Health,*
[3]*Institute for Cardiovascular Metabolic Research, Harry Nursten Building, Pepper Lane, University of Reading, Reading, UK and*
[4]*The University of Malawi, Zomba, Malawi*

Diets higher in pulses, defined as dry edible seeds of the legume family are associated with lower cardiovascular disease (CVD) risk markers, including blood lipids(1). Pulses are an important component of a balanced diet due to their general richness in fibre, iron and zinc(2). Adequate intake of pulses is associated with lower incidences of iron deficiency anaemia, one of the most common diet-related deficiencies in the UK(3). Therefore, the objectives of this analysis were to determine the frequency quantity of pulse consumption and assess its association with total dietary nutrient intake, iron status and CVD risk markers in the UK adult population.

A cross-sectional analysis was performed using four-day estimated diet diaries and CVD risk markers (blood lipids and glucose, blood pressure and anthropometric measures) and biomarkers of iron status (plasma ferritin and haemoglobin) in adults (>19years) from Years 1–11 of the National Diet and Nutrition

Survey (NDNS, 2008–2019). Linear regression analysis was performed with energy, ethnicity, age, sex, and household income included as covariates for dietary intake and CVD risk markers and supplement usage was added to the analysis of iron status markers. Sample weights were applied to the dataset prior to analysis.

In the adult population (total n = 7999), 59% consumed pulses (dried beans, lentils, peas, and chickpeas), with men consuming on average 3 g/d more than women (mean ± SD; 16.3 ± 16.1 vs 13.2 ± 15.7 g/d, respectively). People of Asian descent (n = 265) consumed on average 20.3 g and 16.6 g more pulses than white (n = 7389) and black (n = 171) people respectively, $p = 0.015$. One portion of pulse intake (80g/day) was associated with significantly higher dietary carbohydrate (14.4g), fibre (8g), thiamine (0.08mg), vitamin B^{12} (4.8 mg), total iron (2.2mg), folate (38.4mg), zinc (0.8mg), sodium (0.3g) and phosphorus (51.2mg); and lower dietary fat intake (5g), (all $p < 0.001$). Whilst consumption of one portion of pulses was associated with a lower haem iron intake (0.08 mg, $P = 0.014$) no associations were evident with plasma ferritin or blood haemoglobin concentrations. Furthermore, pulse consumption was not associated with CVD risk markers, $p > 0.05$.

These data suggest that diets higher in pulses are associated with more favourable nutrient intakes (except for higher sodium) including total and non-haem iron. Although dietary haem iron was lower it was not associated with circulating markers of iron status. Our findings support the importance of pulses within a balanced diet and the potential for reducing iron deficiency anaemia in adults through increasing total iron intake.

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References

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