Pulse consumption, dietary intake and health assessment of a representative UK population

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Introduction

- Diet is a crucial factor in the causation and prevention of non-communicable diseases , with high plant-based diets associated with improved health outcomes [1].
- Pulses, defined as dry edible seeds of leguminous crops, are rich in nutrients and bioactive compounds which are associated with lowering cardiovascular disease risk [1-2].
- The Raising the Pulse Project is a three-year multidisciplinary study aiming to improve human and environmental health through introducing faba bean enriched foods in the UK.

Methodology

Aim of analysis

- To quantify pulse consumption in the UK population and assess its association with health outcomes.

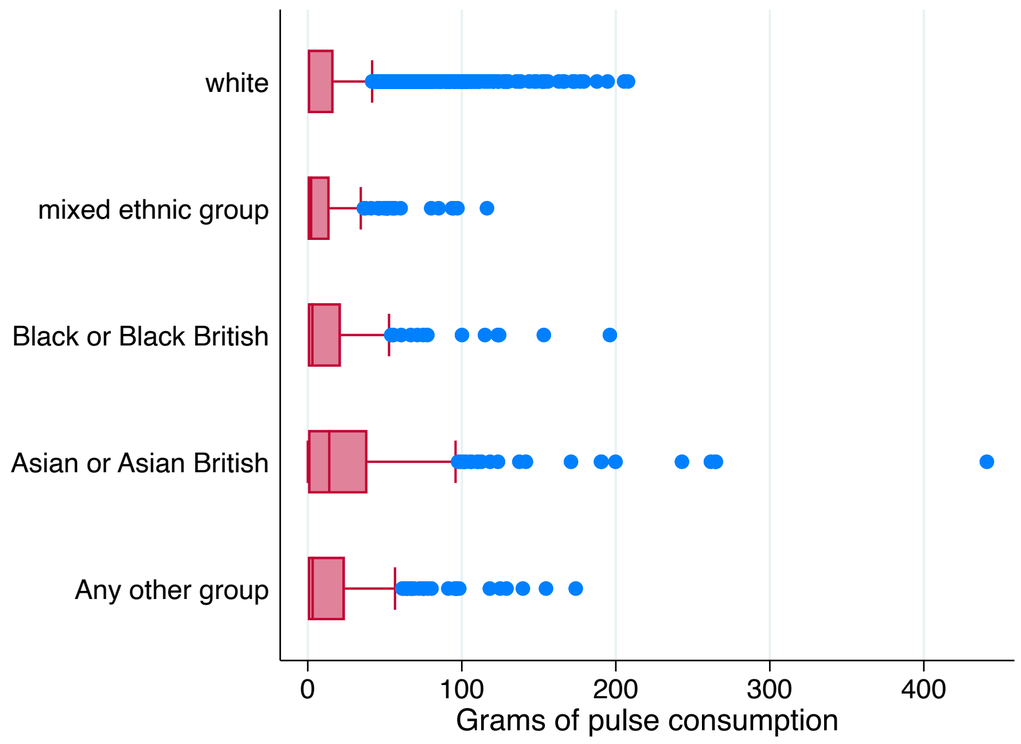
NDNS database

- The National Diet Nutrition Survey (NDNS) is a continuous cross-sectional survey performed in a representative sample of UK adults and children aged 1.5 and above.
- The NDNS collects food consumption, nutrient intake, biochemical markers of nutritional status and CVD risk of individuals, with 15655 individuals studied from 2008 to 2019.

Statistical analysis

- Data was analysed using STATA version 17.
- Linear regression analysis was performed to assess dietary patterns and its impact on health outcomes; with energy, ethnicity, age, sex, and household income included as covariates.
- Mean dietary intake for macronutrients and micronutrients were weighted to reduce sample bias prior to statistical analysis

Figure 1: Pulse consumption in the UK population by race



Results

- In the UK, 56% of population consumes pulses with only 1.2% consuming faba beans, figures 1 and 2.

Figure 2: Types and frequency of pulses consumed in the UK

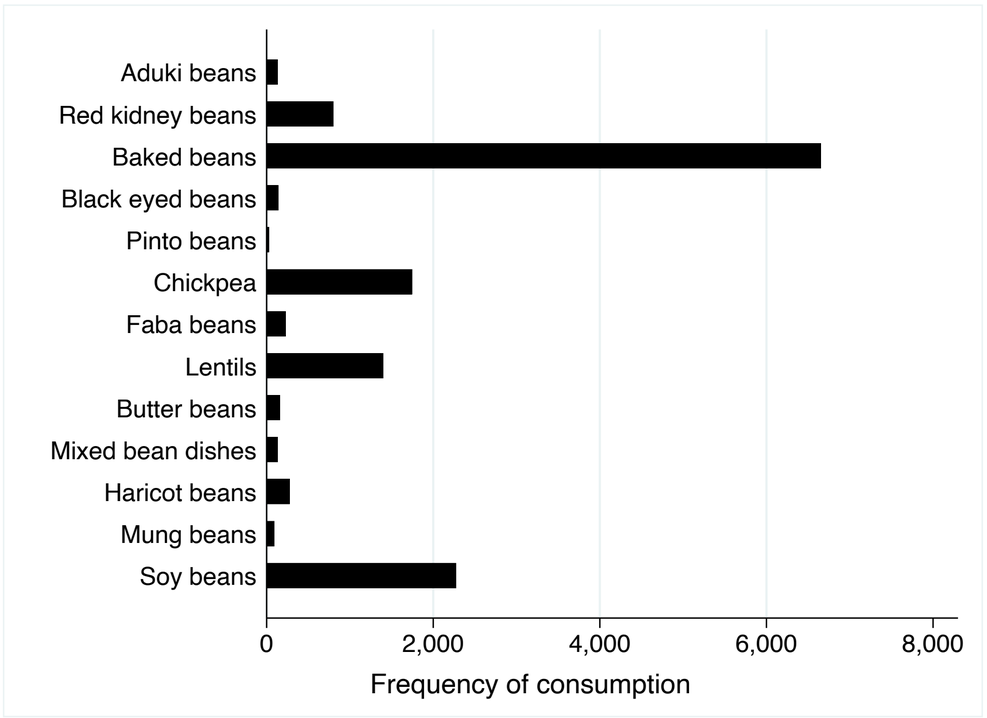


Table 1: Comparison of nutrient intake by pulses consumed

Nutrients	Non consumers (Mean ± SD)	Consumers (Mean ± SD)	P- Value
Energy(kcal/day)	1741±439	1811±438	0.002
Protein (g/day)	69.9±21.2	71.7±18.2	0.494
Carbohydrate (g/day)	214.±56	225±57	0.048
Fibre (g/day)	16.0±4.7	19.6±5.4	<0.001
Total sugar (g/day)	92.9±34.2	95.6±34.2	0.855
Fat (g/day)	66.2±20.4	67.9±20.3	0.002
Zinc (mg/day)	7.9±2.4	8.3±2.3	0.038
Iron (mg/day)	9.5±2.8	10.2±2.9	<0.001
Potassium (mg/day)	2592±692	2788±686	<0.001
Folate (mg/day)	224±76	245±79	<0.001

- High pulse consumption was not significantly associated with systolic and diastolic blood pressure, LDL and HDL cholesterol, glucose and triacylglycerol concentrations, P>0.05.

Conclusion

While consumption of pulses was associated with higher intakes of nutrients, this was not associated with improved health outcomes. This cross-sectional analysis suggests that other components influence the protective effects of pulse rich diets.

References

1. Padhi, E. M., & Ramdath, D. D. (2017). A review of the relationship between pulse consumption and reduction of cardiovascular disease risk factors. *Journal of Functional Foods*, *38*, 635-643.
2. Lane L, Reynolds C, Wells R. (2023) *Beans, Peas and Pulses: UK Consumption Patterns and the Impact of Recipes*.; 2023. doi:10.13140/RG.2.2.29413.27369

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