

## Diet and hip fracture risk in the UK women's cohort study

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Hip fracture affects 1.6 million people globally each year, and increases morbidity and mortality<sup>(1,2)</sup>. There is potential for risk reduction through diet modification, but prospective evidence for associations between intake of several foods and nutrients and hip fracture risk is limited. This study aimed to investigate associations between food and nutrient intakes and hip fracture risk in the UK Women's Cohort Study, and to determine the role of body mass index (BMI) as a potential effect modifier. Dietary, lifestyle, anthropometric, and socio-economic information of 35372 UK women, ages 35–69 years, were collected in a survey at recruitment (1995–1998) and included a validated 217-item food frequency questionnaire. Hip fracture cases were identified by linking participant data at recruitment with their Hospital Episode Statistics up to March 2019. Cox regression models were used to estimate associations between standard portion increases in food and nutrient intakes and hip fracture risk over a mean follow-up time of 21.1 years. Among 30,244 women included, 993 hip fracture cases were observed (637,427 person-years). After adjustment for confounders, every additional cup of tea or coffee was associated with a reduced risk of hip fracture (0.96 (0.92, 0.996)). A 25 g/day increase in dietary protein intake was associated with a reduced risk of hip fracture (HR (95% CI): 0.86 (0.73, 1.00)). In subgroup analyses, BMI (<18.5, 18.5–24.9,  $\geq 25$  kg/m<sup>2</sup>) modified linear associations between dietary intakes of protein, calcium, vitamin D, total dairy, milk, and tea and hip fracture risk; these foods and nutrients were associated with a reduced risk of hip fracture in underweight but not healthy or overweight participants. The HR (95% CI) for protein (per 25 g/day increase) in underweight participants was 0.55 (0.38, 0.78), though the number of cases in underweight participants was small. This is the first prospective study of multiple food and nutrient intakes in relation to hip fracture risk by BMI. Results suggest that the potential role of some foods and nutrients in hip fracture prevention, particularly in underweight women, merits confirmation.

### References

1. Dhanwal DK, Dennison EM, Harvey NC, *et al.* (2011) *Indian J Orthop* **45**, 15–22.
2. Murphy EA, Ehrhardt B, Gregson CL, *et al.* (2022) *Sci Rep* **12**, 1–11.