

Wednesday 15 September

Session: Dementia Cognition & Ageing,  
13.00 – 15.25**OP25 FOOD CONSUMPTION AND COGNITIVE DECLINE: AN ANALYSIS OF THE UK BIOBANK COHORT**

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**Background** Cognitive decline is of increasing concern in aging societies worldwide and could highlight a key time window for prevention of developing dementia. Evidence on food consumption in relation to cognitive decline remains unclear.

**Methods** Consumption frequencies of common foods including vegetables, fruits, total fish (oily fish and non-oily fish), and total meat (processed meat, unprocessed red meat, and unprocessed poultry), were assessed via a 47-item food frequency questionnaire in 502,493 UK Biobank participants (mean age: 56.5 years, SD: 8.1; female: 54%) at recruitment in 2006–2010. Prevalent dementia cases (n=564) at baseline were excluded from analyses. Cognitive decline from baseline to follow-up 6–8 years later was characterised in five separate cognitive functions: visual memory (n=51,295), numeric memory (n=3131), fluid intelligence (n=16,122), reaction ability (n=52,929), and prospective memory (n=16,400). The cognitive change was estimated using a standardized multiple regression-based approach. Associations between food consumption at baseline and cognitive changes were fitted in logistic regression adjusting for age, gender, ethnicity, education, socioeconomic status, living region, smoking status, alcohol status, physical activity level, body mass index, sleep duration, stroke history, and family history of dementia; odds ratio (OR) and 95% confidence interval (CI) were reported.

**Results** In this population-based cohort study, high fruit consumption was associated with increased odds of deteriorating visual memory (OR=1.04, 95%CI: 1.01, 1.06;  $P=0.002$ ), whereas high vegetable consumption was linked to increased odds of deteriorating prospective memory (OR=1.14, 95%CI: 1.07, 1.21;  $P<0.001$ ). Consumption of oily fish was associated with deteriorating visual memory in the total sample (OR=1.08, 95%CI: 1.04, 1.12;  $P<0.001$ ), but this was observed in women only (OR=1.08, 95%CI: 1.04, 1.12;  $P<0.001$ ). Consumption of total fish was associated with a decline in visual memory in the total sample (OR=1.05, 95%CI: 1.02, 1.08;  $P<0.001$ ) and in men (OR=1.05, 95%CI: 1.02, 1.09;  $P=0.003$ ), and a decline in reaction ability only in women (OR=1.05, 95%CI: 1.01, 1.09;  $P=0.007$ ). Meat consumption of any type was not related to cognitive decline in all five cognitive functions.

**Conclusion** High consumption of vegetable, fruit and fish may be associated with increased risk of cognitive decline. One possible explanation is high consumption of fruits and vegetables may be associated with lower protein intakes. Animal protein has been associated with better cognitive performance. These findings need to be interpreted with caution and confirmed in other studies.

**OP26 19-YEAR TRAJECTORIES OF CARDIO-METABOLIC FACTORS AMONG PATIENTS WITH TYPE 2 DIABETES BY DEMENTIA STATUS IN ENGLAND**

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**Background** Type 2 diabetes (T2D) and dementia are both costly and rapidly growing global health crises, and major contributors to comorbidities and mortality. Recent improvements in treatments for T2D have improved survival, but people with T2D are subjected to a two-fold increase in risk of dementia. Associations of cardio-metabolic factors with dementia among patients with type 2 diabetes (T2D) are uncertain, and possibly driven by reverse causation, as dementia develops progressively long before diagnosis. Thus, assessing longitudinal trajectories over longer-follow up may help elucidate this relationship.

**Methods** We identified 227,580 patients with T2D aged >42 years between 1st January 1999 and 31st December 2018. Annual mean levels of eight routinely measured cardiometabolic factors were extracted from the Clinical Practice Research Datalink (England). Multivariable-adjusted multilevel piecewise and non-piecewise growth curve models assessed retrospective trajectories of cardio-metabolic factors among patients with T2D by dementia status from up to 19 years before dementia diagnosis (dementia) or last contact with healthcare (no dementia) at baseline.

**Results** 23,319 patients developed dementia; mean (SD) follow-up was 10.0 (5.8) years. Patients with dementia at baseline had a lower systolic blood pressure (SBP), body mass index (BMI), but higher fasting plasma glucose (FPG), HbA1c, and cholesterol compared to patients without dementia. In the dementia group, mean SBP increased 16–19 years before dementia diagnosis compared with patients without dementia, but declined more steeply from 16 years before diagnosis (-0.16 (95% CI -0.18, -0.14) mmHg per year). Diastolic blood pressure generally declined at similar rates, but levels at baseline by dementia status was not significantly different (0.11 mmHg,  $p=0.063$ ). Mean FPG and HbA1c were generally higher among patients with dementia throughout follow-up, ranging between 0.09 to 0.21 mmol/L ( $p<0.03$ ) and 0.66 to 5.07 mmol/mol ( $p<0.005$ ) respectively. Mean BMI followed a steeper non-linear decline from 11 years before diagnosis in the dementia group, where group differences ranged between -0.22 to -1.26 kg/m<sup>2</sup> ( $p<0.001$ ). Mean blood lipid levels (total cholesterol, low-density lipoprotein, high-density lipoprotein) were generally higher in the dementia group compared with those without dementia and followed similar patterns of change.

**Conclusion** Marked changes in levels of cardiometabolic factors are apparent up to two decades prior to diagnosis of dementia, and could be potential targets for early intervention to prevent and delay the onset of dementia among older adults.