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Association of types of dietary fats and all-cause and cause-specific mortality: a prospective cohort study and meta-analysis of prospective studies with 1,148,117 participants.

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Topic(s):
Nutrition, Malnutrition and Heart Disease

Citation:

Funding Acknowledgements:
None

Background: The associations between dietary fats with mortality are poorly delineated.

Purpose: Using a large prospective cohort we evaluated the link between total fat, mono-unsaturated (MUFA), polyunsaturated (PUFA) and saturated fatty acid (SFA) consumption and all-cause, coronary heart disease (CHD), stroke, and diabetes (T2D)-associated mortality in a representative sample of US adults. We then added our results to a systematic review and meta-analysis.

Methods: We evaluated 35,080 participants from the National Health and Nutrition Examination Surveys (NHANES) 1988-1999 (19.2 years follow-up) and 1999-2010 (12 years follow-up), with vital status available through December 31, 2011. Cox proportional hazard regression models were used to evaluate the association between baseline quartiles of fat consumption (g/day, 24h recall) and all-cause or cause-specific mortality. For the systematic review, selected databases were searched up to November 2018 and 29 prospective cohorts (n=1,148,117) met inclusion criteria. The DerSimonian-Laird method and generic inverse variance methods were used for random effects meta-analyses.

Results: In fully adjusted models from our prospective study, there was a negative association between total fat (hazard ratio [HR]: 0.90, 95% confidence interval [CI]: 0.82, 0.99, Q4 vs. Q1) and PUFA (0.89, 95%CI: 0.82-0.84) consumption and all-cause mortality (Figure), whereas SFA were positively associated with mortality (1.08, 95%CI: 1.04-1.11). In the meta-analysis we found a significant negative association between total fat (HR: 0.89, 95%CI: 0.82-0.97, I2: 27%), MUFA (0.93, 95%CI: 0.87-0.99, I2: 56%) and PUFA (0.86, 95%CI: 0.80-0.93, I2: 63%) consumption and all-cause mortality. No significant association was observed between total fat and both CVD and CHD mortality (0.92, 95%CI: 0.79-1.08, I2: 46%, and 1.03, 95%CI: 0.99-1.09, I2: 42%, respectively), while a positive association between SFA intake and CHD mortality (1.10, 95%CI: 1.01-1.20, I2: 52.6%) was observed. Neither MUFA nor PUFA were associated with CVD and CHD mortality. Inverse associations were observed between MUFA (0.80, 95%CI: 0.67-0.96, I2: 0%) and PUFA (0.84, 95%CI: 0.80-0.90, I2: 0%) intakes and stroke mortality.
Conclusions: Our results highlight differential associations of total fat, MUFA and PUFA intake with all-cause mortality, but no association of them with CVD and CHD mortalities. SFA intake was significantly associated with higher all-cause mortality in NHANES and with CHD mortality in our meta-analysis. The type of fat intake appears to be associated with important health outcomes.