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Associations of red meat, poultry, fish and egg intake with risk of cardiovascular disease: an 11-year prospective study of the China Kadoorie Biobank

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Background: Higher red meat intake and lower fish intake have been associated with increased risk of cardiovascular disease (CVD), while the relevance of poultry and egg intake for CVD incidence remains inconclusive. Furthermore, most of the prospective evidence comes from studies in the Western populations, with limited data from China where the CVD patterns are largely different.

Purpose: We therefore investigated the associations of red meat, poultry, fish and egg intake with risks of several major types of CVD in Chinese adults.

Methods: The China Kadoorie Biobank is a prospective study which recruited ~512,000 adult participants from ten diverse localities during 2004-08. At baseline and periodic resurveys, information on the consumption frequency of major food groups was collected using a validated interviewer-administered laptop-based questionnaire, together with medical history, socio-demographic and other lifestyle factors. During an average follow-up of 10.9 years, 47,128 incident ischaemic heart disease events, 43,481 ischaemic strokes and 9749 intracerebral haemorrhages were recorded among 489,595 participants, who did not have a prior history of CVD at baseline. Cox regression was used to calculate adjusted hazard ratios (HRs) relating dietary exposures to CVD risk.

Results: There were 47.2%, 1.4%, 9.0% and 24.1% of participants at baseline who regularly consumed (i.e. ≥ 4 days/week) red meat, poultry, fish and eggs, respectively. After adjusting for potential confounders, including body mass index and other dietary factors under study, egg consumption was significantly associated with lower risks of ischaemic heart disease and ischaemic stroke, with each 50 g/day increase in estimated habitual egg consumption being associated with 18% (HR 0.82, 95% confidence interval [CI] 0.75-0.90) and 24% lower risks (HR 0.76, 0.69-0.84), respectively. Inverse associations were also observed between intakes of red meat, fish and eggs and risk of intracerebral haemorrhage, with adjusted HRs for 50 g/day higher intake being 0.84 (0.74-0.97), 0.86 (0.74-0.99) and 0.42 (0.34-0.51), respectively.

Conclusion: This large prospective study of Chinese adults showed that higher intake of eggs was associated with lower risks of ischaemic heart disease and ischaemic stroke. Moreover, higher intakes of red meat, fish and eggs were each associated with a lower risk of intracerebral haemorrhage. Further investigation of the potential mechanisms that underlie the observed associations is required.