Plenary 5: Nutrition and Ageing

Diet in childhood and diet and mortality in old age: findings from the Boyd Orr cohort

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Background – Childhood diet may have important implications for health in old age for two reasons. First, diet in childhood may influence diet in later life. Second, diet in childhood may have direct effects on the pathogenesis of chronic disease processes independent of subsequent adult diet. Few studies have examined the associations of diet in childhood with later diet and mortality in old age prospectively. I will attempt to summarise findings from the Boyd Orr cohort that have examined the association between diet in childhood and later diet and health outcomes.

Methods – The Boyd Orr cohort is based on the long-term follow-up of 4,999 children who were surveyed in the Carnegie survey of Family Diet and Health in Pre-World War II Britain (1). Socio-economic data, anthropometric data and a seven-day household dietary inventory were collected on 1,352 families living in 16 areas of England and Scotland between 1937 and 1939 and repeat dietary data was collected on over 300 families (1). The name, age and address of the children of the families surveyed were used to trace the children and 88% have been successfully traced (1). In 1997-1998 a self-completion questionnaire that included a 113-item food frequency questionnaire was sent to all 3,182 surviving traced study members (2).

Results – A childhood diet rich in vegetables was associated with a healthy diet in early old age. In multivariable models the healthy diet score (a 12 item score) for those in the upper quartile of childhood vegetable intake was 0.30 (95% CI –0.01 to 0.61, p for trend 0.04) higher compared to those in the lowest quartile. (2) Higher childhood energy intake was associated with increased cancer mortality - in multivariable proportional hazard models that adjusted for social variables the relative hazard for all cancer mortality was 1.15 (95% CI 1.06 to 1.24, p 0.001 for every MJ increase in adult equivalent daily intake) (3). Higher fruit intake was associated with reduced risk of incident cancer. In fully adjusted logistic regression models odds ratios (95% CI) across increasing quartiles of fruit consumption were 1.0 (reference), 0.66 (0.48 to 0.90), 0.70 (0.51 to 0.97) and 0.62 (0.43 to 0.90), p for linear trend =0.02. (4) Higher childhood intake of vegetables was associated with lower risk of stroke. After controlling for age, sex, energy intake and range of socio-economic and other confounders the rate ratio between the highest and lowest quartiles of intake was 0.40, 95% CI 0.19 to 0.83, p for trend = 0.01) (5) Higher intake of fish was associated with higher risk of stroke. The fully adjusted rate ratio between the highest and lowest quartile of fish intake was 2.01, 95% CI 1.09 to 3.69, P for trend = 0.01) (5). There was no association between intake of any of the foods and constituents considered and deaths attributed to coronary heart disease or all cause mortality (5). The reported childhood diet-cancer associations were robust to adjustment for measurement error (6).

Conclusions – Though these results are based on household measures on children across a range of ages measured in the 1930s they do suggest that diet in childhood influences diet in old age and cancer risk. These findings require replication but suggest that childhood diets rich in vegetables and fruit may be beneficial.

References