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Association between change in intake of dietary folate during adult life and later cognitive decline: results of 1946 British Cohort

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The association between nutrition and cognition has increasingly been investigated in the last decade. Of several nutritional factors currently of specific interest, circulating homocysteine concentrations and nutrients involved in homocysteine pathways, such as folate, have been studied extensively because of the possibility of vascular involvement in cognitive impairment. The protective effect of folate on cognitive functioning and dementia has been suggested by cross-sectional studies, while results from prospective studies have been more inconsistent[1–4]. Although previous clinical trials have not provided evidence of an association between folate and cognition[5,6], a recent 3-year trial[7] has shown a beneficial effect of folate supplementation on cognitive decline. However, to date there has not been any work assessing the impact of dietary folate intake on cognitive decline in the general population that has confirmed the results of this trial. Furthermore, because the underlying process in dementia is believed to be active many years before clinical expression, it is valuable to study the impact of dietary intakes on cognition in a pre-elderly population. Thus, the objective of the current study is to determine in a sample of the UK population whether a change in folate intake during adult life (36–43 years of age) could protect against later cognitive decline (43–53 years of age).

The British 1946 birth cohort is a longitudinal study of a nationally-representative cohort of singleton births in the UK in 1 week in March 1946. A total of 1817 survey members provided information on diet recorded in a 5 d diary at age 36 years and 43 years. Memory function (fifteen-item word list; WLM) and speed and concentration (timed letter search; TLS) were assessed at age 43 years and at 53 years. Conditional linear regression analyses were performed to model rate of cognitive decline (a positive coefficient indicates a slower rate of decline).

In a preliminary model no association was found between folate intake at 36 years or at 43 years and cognitive change between ages 43 and 53 years. The relationship between change in folate intake between 36 and 43 years of age and cognitive change between ages 43 and 53 years was then studied. Analyses showed that in women the increase in folate intake between 36 and 43 years was associated with slower cognitive decline after adjusting for childhood abilities and vitamins B_6 and B_{12}. After full adjustment for potential confounding factors this association was significant for TLS (β 29.65 (95% CI 9.31, 50.0); $P=0.004$), but not for WLM (β 1.23 (95% CI −0.12, 2.58); $P=0.07$). In men no significant association was observed between change in folate intake and cognitive decline in either of the cognitive tests, before or after adjustment for potential confounders.

These results suggest that rather than intake at any particular time point being the important factor, it is the change in nutrient intakes during adult life that influences rate of cognitive decline in women.

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