



Prospective relevance of aspects of carbohydrate quality in the diet of adolescents for the intima-media thickness of the common carotid artery in younger adulthood

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Epidemiological studies link carbohydrate quality to cardiovascular diseases (CVD). In particular, increased consumption of dietary fibre and whole-grain are discussed as protective, whereas a higher dietary glycaemic index (GI) and glycaemic load (GL) may increase CVD risk⁽¹⁾. This study determined whether these aspects of carbohydrate quality during puberty, a period characterised by physiological insulin resistance, are already related to carotid intima-media thickness (IMT) in younger adulthood, a surrogate marker of early atherosclerosis predictive for future cardiovascular events⁽²⁾.

The analysis was based on data of 194 participants (111 girls and 83 boys) from the DONALD Study with at least two 3-day weighed dietary records (range 2–6) during puberty (girls, 9–14 years, boys, 10–15 years) and one sonographic measurement of the IMT in younger adulthood (18–39 years; IMT averaged from 16 measurements on 4 images). Multivariable linear regression models were used to analyse the associations between carbohydrate quality and IMT. Sex, age (adult), smokers in the household, maternal overweight, maternal education and breastfeeding were considered as potential confounders.

Tests for interaction indicated that associations of pubertal GI, fibre intake and fibre intake from fruits with adult IMT differed by sex ($p_{\text{interaction}} = 0.04$, $p_{\text{interaction}} = 0.02$, $p_{\text{interaction}} = 0.01$ respectively). Thus, analyses were run both in the total and sex-stratified cohort. In the total cohort, there was no statistically significant association between any of the investigated aspects of carbohydrate quality and IMT after adjustment for potential confounders ($p_{\text{for trend}} > 0.05$). Sex-specific analyses showed an inverse association between dietary fibre intake from fruits and IMT for men only ($p_{\text{for trend}} = 0.002$, for women: $p_{\text{for trend}} = 0.12$).

Overall, this study does not support a prospective relevance of GI, GL, fibre and whole-grain intake in puberty for IMT in younger adulthood. It remains to be determined, whether effects evolve at older age, or whether carbohydrate quality in later life is more relevant for CVD risk.

1. Slyper AH (2013) *J Pediatr Endocrinol Metab* 26, 617–629.

2. Lorenz MW, Markus HS, Bots ML *et al.* (2007) *Circulation* 115, 459–467.