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Prospective association between adherence to UK dietary guidelines in school-aged children and cardiometabolic risk in adolescents/young adults from the Avon longitudinal study of parents and children (ALSPAC) cohort

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UK dietary guidelines are designed to reduce the prevalence of non-communicable chronic disease, including cardiometabolic diseases[1]. However, research into the cardiometabolic benefits of adhering to UK dietary guidelines during childhood is limited[2,3]. This study explores the relationship between adherence to nine core UK Eatwell Guide (EWG) dietary recommendations during childhood and overall cardiometabolic risk in adolescence/early adulthood in the Avon Longitudinal Study of Parents and Children (ALSPAC). Participants were ALSPAC children with complete diet diary data collected at 7, 10 and 13 years of age and anthropometric and biochemical data at 17 (N = 1,940) and 24 years (N = 1,957). Overall adherence to UK dietary guidelines [1] was assessed using a children's Eatwell Guide (C-EWG) score. Each child's intake of total and saturated fat, free sugars, fibre, salt, fruit and vegetables, non-oily fish, oily fish, and red and processed meat was compared to the dietary guidelines. One point was assigned to each food/nutrient if the EWG recommendation was met and 0 points if not met. All points were summed to obtain a C-EWG score (0–9 points) for each child, at each age. Overall cardiometabolic risk at 17 and 24 years was assessed using a Cardiometabolic Risk (CMR) score, calculated as the sum of sex-specific z-scores of triacylglycerol, HDL-cholesterol, LDL- cholesterol, mean arterial blood pressure (MAP), homeostatic model assessment of insulin resistance (HOMA-IR) and fat-mass index (FMI)). Multivariable linear regression models examined associations between the C-EWG score at 7, 10 and 13 years and a continuous CMR z-score and individual CMR markers at 17 and 24 years, after adjusting for confounders. Overall, there was poor adherence to EWG dietary recommendations: most children ($\sim$70%) met $\leq$2 EWG dietary recommendations. In fully adjusted models, a higher C-EWG score (adherence to more dietary guidelines) at 7 years was associated with a decrease in CMR z-score at 24 years; ß -0.96; 95% CI -1.54, -0.37 (p < 0.001) for $\geq$3 vs 0 C-EWG points and ß -0.25; 95% CI -0.38, -0.13 (p < 0.001) per unit increase in C-EWG score. A higher C-EWG score at 10 years was also associated with a decrease in CMR z-score at 24 years (ß -0.20; 95% CI -0.33, -0.08 (p < 0.002) per unit increase in C-EWG score), although the association was weaker when the C-EWG score was analysed as a categorial variable. A similar pattern was seen for the relationship between the C-EWG score at 7 years and CMR z-score at 17 years. No other associations were evident at other ages. FMI, LDL-cholesterol, MAP and HOMA-IR were the main CMR factors contributing to these associations. Greater adherence to UK dietary guidelines during mid-childhood was associated with a better overall cardiometabolic profile in early adulthood. This highlights the cardiometabolic benefits of following a healthy, balanced diet in line with dietary recommendations from childhood.

References

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