Changes in dietary intake during puberty and their determinants: results from the GINIplus birth cohort study.

Abstract:
Understanding changes in dietary intake during puberty could aid the mapping of dietary interventions for primary prevention. The present study describes dietary changes from childhood to adolescence, and their associations with parental education, family income, child education, body mass index (BMI), pubertal onset and screen-time sedentary behaviour. Dietary data (n = 1232) were obtained from food frequency questionnaires at the 10- and 15-year follow-ups of the GINIplus birth cohort study. Intakes of 17 food groups, macronutrients and antioxidant vitamins, were described by a) paired Wilcoxon rank sum tests, comparing average intakes at each time-point, and b) Cohen's kappa "tracking" coefficients, measuring stability of intakes (maintenance of relative tertile positions across time). Further, associations of changes (tertile position increase or decrease vs. tracking) with parental education, family income, child education, pubertal onset, BMI, and screen-time, were assessed by logistic regression and multinomial logistic regression models stratified by baseline intake tertile. Both sexes increased average intakes of water and decreased starchy vegetables, margarine and dairy. Females decreased meat and retinol intakes and increased vegetables, grains, oils and tea. Males
decreased fruit and carbohydrates and increased average intakes of meat, caloric drinks, water, protein, fat, polyunsaturated fatty acids (PUFAs), vitamin C and alpha-tocopherol. Both sexes presented mainly "fair" tracking levels [?w = 0.21-0.40]. Females with high (vs. low) parental education were more likely to increase their nut intake [OR = 3.8; 95% CI = (1.7; 8.8)], and less likely to decrease vitamin C intakes [0.2 (0.1; 0.5)], while males were less likely to increase egg consumption [0.2 (0.1; 0.5)] and n3 PUFAs [0.2 (0.1; 0.5)]. Females with a higher (vs. low) family income were more likely to maintain medium wholegrain intakes [0.2 (0.1; 0.7) for decrease vs. tracking, and 0.1 (0.0; 0.5) for increase vs. tracking], and were less likely to decrease vitamin C intakes [0.2 (0.1; 0.6)]. Males with high education were less likely to increase sugar-sweetened foods [0.1 (0.1; 0.4)]. Finally, BMI in females was negatively associated with decreasing protein intakes [0.7 (0.6; 0.9)]. In males BMI was positively associated with increasing margarine [1.4 (1.1; 1.6)] and vitamin C intakes [1.4 (1.1; 1.6)], and negatively associated with increasing n3 PUFA. Average dietary intakes changed significantly, despite fair tracking levels, suggesting the presence of trends in dietary behaviour during puberty. Family income and parental education predominantly influenced intake changes. Our results support the rationale for dietary interventions targeting children, and suggest that sex-specific subpopulations, e.g. low socio-economic status, should be considered for added impact.