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A healthy plant-based diet from adolescence towards young adulthood: psychosocial determinants and nutrient intake/status correlates

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Introduction New dietary recommendations focus on a plant-based diet. As dietary habits are formed during adolescence, knowledge on determinants of this food choice in this age-group can help prevention campaigns. Since an unbalanced choice in plant-based food might lead to nutrient deficiencies, it is also crucial to detect its association with nutrient intake and nutrient status.

Methods In 2330 adolescents from the European HELENA study in 2006, a healthy plant-based diet index (hPDI) was calculated based on two 24 h recalls. In Belgium, 69 of them were remeasured in 2016 as young adults. The psychosocial determinants nutritional knowledge, advantages, awareness, social support, social norm, self-efficacy, barriers, availability and intention were tested by multiple linear regression. Nutrient status was determined by 16 markers in fasting blood. Linear regressions with hPDI as predictor and nutrient intake/status as outcome were adjusted for age, sex, socio-economic status, BMI, waist circumference, energy-intake, physical activity and smoking.

Results There was a strong correlation in hPDI after 10 years (Spearman = 0.56, $p < 0.001$). Determinants for adolescents' plant-based diet were in descending order being a girl ($\beta = 0.245$; $p < 0.001$), a higher BMI ($\beta = 0.140$; $p < 0.001$), knowing the advantages ($\beta = 0.104$; $p < 0.001$), having availability over healthy food ($\beta = 0.100$; $p < 0.001$), high self-efficacy ($\beta = 0.087$; $p < 0.001$), health awareness ($\beta = 0.072$, $p = 0.004$), younger age ($\beta = -0.048$; $p = 0.015$) and better nutritional knowledge ($\beta = 0.046$; $p = 0.020$). In adolescents, hPDI was associated with lower energy intake, especially less overall fat, cholesterol, saturated fatty acids, mono-unsaturated fatty acids, proteins and mono/di-saccharides but more fibre. In micronutrients, higher intake of calcium, iron, magnesium, potassium, zinc, copper, vitamin A, C, E, K but less vitamin B12 and D were detected. Concerning nutrient status, hPDI was related to higher low-density cholesterol, vitamin D, vitamin C and beta-carotene levels. In adults, hPDI was associated with lower energy intake, especially less overall fat, cholesterol, saturated fatty acids and mono-unsaturated fatty acids but more carbohydrates and fibre, magnesium and vitamin C; while not with nutrient status. Longitudinally, we confirmed the link with intake of more fiber, potassium and less cholesterol. Additionally, a longitudinal positive association with poly-unsaturated fat intake was seen.

Conclusion Tracking of hPDI over 10 years proved the importance of targeting these determinants in adolescents. The hPDI was indeed generally linked to a healthier dietary intake, especially more fiber, a healthier fat choice and higher vitamin intake except for lower vitamin B12 and D. Nevertheless, the latter two were not reflected in more deficiencies and nutrient status differences were limited.

Conflict of Interest

These analyses are a first set within a project for which we received funding by Alpro Foundation. This did not influence the scientific content.