Socio-economic differences in cardiometabolic risk markers are mediated by diet and body fatness in 8- to 11-year-old Danish children: a cross-sectional study

Objective To explore whether socio-economic differences exist in cardiometabolic risk markers in children and whether lifestyle-related factors potentially mediate these differences. Design Cross-sectional study including measurements of fasting blood lipids, glucose, homeostasis model assessment of insulin resistance (HOMA-IR), blood pressure and heart rate. Potential mediators examined were fat mass index (FMI); intakes of fruit, vegetables, dietary fibre and added sugar; whole-blood n-3 long-chain PUFA (LCPUFA) as a biomarker of fish intake; and physical activity and sedentary time. Setting Nine primary schools in Denmark. Subjects Children aged 8–11 years (n 715). Results Children of parents with the shortest compared with longest education had higher TAG by 0·12 (95 % CI 0·04, 0·21) mmol/l and HOMA-IR by 0·36 (0·10, 0·62), whereas children of parents with a vocational education had higher total cholesterol by 0·14 (0·02, 0·27) mmol/l and LDL cholesterol by 0·14 (0·03, 0·25) mmol/l compared with children of parents with the longest education; all P<0·05. FMI explained 25 % of the difference in TAG, 64 % of the difference in HOMA-IR and 21–29 % of the differences in cholesterol. FMI and whole-blood n-3 LCPUFA combined explained 42 % of the difference in TAG, whereas FMI, whole-blood n-3 LCPUFA and dietary fibre explained 89 % of the difference in HOMA-IR. Conclusions Socio-economic differences were present in blood lipids and insulin resistance among 8- to 11-year-olds and were mediated by body fatness, whole-blood n-3 LCPUFA and dietary fibre. These lifestyle factors may be targets in public initiatives to reduce socio-economic differences. Confirmation in longitudinal studies and trials is warranted.

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