

Abstract

Atherosclerotic cardiovascular diseases (CVD), particularly coronary heart disease (CHD) and cerebrovascular disease, are today major causes of death in the industrialised parts of the world. There are evidence to suggest that the atherosclerotic process starts in childhood, implying that preventive measures should be implemented already in children and adolescents.

The aim of this study was to examine CVD risk indicators and their determinants in healthy Swedish adolescents. The study population comprised 14- and 17-year-old boys and girls (n=1032), in the city and surroundings of Umeå in northern Sweden.

Biochemical, anthropometric, and physiological parameters associated to CVD (s-lipoproteins and s-apolipoproteins, s-insulin, s-ferritin, anthropometric measurements, blood pressure, and physical fitness) were evaluated in relation to family history of CVD, weight and length at birth, infant feeding regimen, physical growth during infancy and childhood, current diet, physical activity, smoking, and educational level and occupation of the parents.

The main findings of the study were that, on average, total serum cholesterol (TC) values in boys and girls were at the same level as reported from other European countries. A family history of CVD, short duration of breast feeding, low attained height during infancy and childhood, high body mass index (BMI), and low physical fitness were all associated with an unfavourable serum lipid profile. The findings also showed that features typical of the insulin resistance syndrome are present already in adolescents. In boys, iron stores, estimated by serum ferritin, were related to BMI and physical fitness, in a similar way as well established CVD risk indicators. Compared to previous dietary studies in Sweden, mean relative (energy%) fat intake had decreased substantially although the mean relative intake of saturated fat was still rather high. For both boys and girls, reported relative energy intake (energy intake/estimated energy expenditure) decreased with increasing level of BMI. Furthermore, daily smoking was more common among adolescents from families with low socio-economic status (SES) but was most strongly associated to smoking in peers. Tobacco use was considerably higher among adolescents attending vocational programs at secondary high school as compared to theoretical programs. Daily smokers had a more unfavorable serum lipid profile compared to non-smokers. Low socioeconomic status of the parents was related to higher BMI and low educational level to higher dietary fat intake in both boys and girls.

In conclusion, the findings of the study show that parameters linked to adult CVD when examined in adolescents, are related to family history, infant nutrition, previous physical growth, current body composition, physical fitness, physical activity, smoking, and social status and educational level of the parents.

Key words: *Cardiovascular risk factors, adolescents, serum lipids, serum insulin, serum ferritin, anthropometry, blood pressure, physical fitness, physical activity, diet, smoking, socioeconomic status*