

Trends in diet, serum cholesterol and BMI among Swedish adults

07 April 2012

Researchers in Sweden have used data from one of the largest databases in the world on dietary intake to identify 25-year trends in diet, cholesterol and body mass index (BMI) among adults living in northern Sweden. The findings hint at the importance of following official dietary guidelines rather than popular diet fashions.

In the 1970s it was discovered that men in the north of Sweden – specifically in the area of Västerbotten – had among the highest prevalence of cardiovascular diseases worldwide. In 1985, the Västerbotten Intervention Programme (VIP) was initiated in this area in an attempt to combat this situation. The programme is still in place today and combines both population- and individual-oriented activities.

A major goal at the start of the intervention was to reduce cholesterol levels by promoting a “modified Mediterranean diet”. This diet encouraged the consumption of less total fat and fewer eggs, while emphasising greater intakes of fruit, vegetables, fish, and whole grain bread.

The authors of the current study used data from the VIP, as well as data from the Northern Sweden MONICA (Multinational Monitoring of Trends and Determinants in Cardiovascular Diseases) study, to evaluate trends in food intake, serum cholesterol, and body mass index (BMI) between 1986 and 2010. Both the VIP and MONICA projects used a semi-quantitative food frequency questionnaire (FFQ) to estimate dietary intake.

In this 25-year period, two significant trends in reported fat intake were identified. The first was a drop in total fat intake as a percentage of total energy intake between 1986 and 1992. The second trend started in 2002 (for women) and 2004 (for men), when reported total fat intake began to increase again. By 2010, levels had exceeded those reported at the beginning of the intervention in 1986, with men getting 39.9% of their total energy intake from fat and women getting 37.7%.

Reported carbohydrate intakes showed a reverse trend to fats, initially rising at the start of the intervention and later declining towards the end, while the amount of energy people obtained from protein remained relatively stable over the entire 25-year period. In contrast, people’s BMI (a measure of weight relative to height) increased steadily from 1986 to 2010: the mean BMI for men went from 25.5 to 27.1 kg/m², while the mean BMI for women increased from 24.8 to 25.9 kg/m². Wine consumption similarly showed a continuous increase over the study period, especially among women.

The authors also observed a steady fall in levels of total serum cholesterol between 1986 and 2004. These levels remained stable until 2007, when they began to rise again. There appears to be a relationship between this increase in cholesterol after 2007 and the observed increase in fat intake after 2004, although the study design did not allow the authors to establish whether this was a causal relationship. They nevertheless point out that these two trends, along with increasing BMI, are of great concern for the prevention of cardiovascular disease. It seems these trends may be related to the popularity of a very-low-



carbohydrate and high-fat diet at the time, which was supported in the media as a means for weight loss and blood glucose control among type-2 diabetics. Official dietary guidelines commonly recommend fat intakes in the range of 30-35% of total energy intake.

The population-based sample, large number of observations and long follow-up period are major strengths of this study. At the same time, the authors recognise that there is a tendency for people to underreport what and how much they eat when using FFQ and interview methods. As such, they point out the need for validation studies in the future.

For more information, see

[Johansson I et al. \(2012\). Associations among 25-year trends in diet, cholesterol and BMI from 140,000 observations in men and women in Northern Sweden. Nutrition Journal 11:40.](#)