What is already known on this topic

Socioeconomic position in childhood is associated with future insulin resistance and coronary heart disease

What this study adds

Among Danish children, those with the most educated and highest earning parents were the least insulin resistant

The opposite was true for children from Estonia and Portugal; those from the most educated and highest earning parents were the most insulin resistant

These results are a reminder that socioeconomic inequalities are dynamic and vary between countries, over time, and between generations within the same country

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Commentary: Health inequalities and social dynamics in Europe

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Lawlor and colleagues make the valid point that health inequalities are dynamic and change over time and between countries.[1] Unexpectedly, in Estonia and Portugal they found that a high level of insulin resistance is more common among children of more highly educated parents. They ask whether this is because of the new wealth of these families, perhaps a preference for Western style "junk" food?

A well known, but often ignored, fact is that the social distribution of risk factors, disease, and mortality varies by disease entity, time period, and country. "Anomalies," or deviations from the standard pattern of poorer people having poorer health, include breast cancer and malignant melanoma. Certain risk factors for heart disease, such as smoking or obesity, may previously have been more common among people who are wealthy; in some countries this is still so. Studies from several countries suggest that as coronary heart disease became more common, its inverse class pattern among men became more pronounced, perhaps even preceded by a reversal some decades ago.[2] Similarly, the generally higher mortality rate ratios for circulatory diseases (comparing manual and non-manual workers) in northwestern Europe than in southern Europe may be a result of a "phase difference," implying that those ratios will soon increase in the south.[3] Is what the authors report from Portugal, Estonia, and Denmark consistent with such a phase transition? We feel that this is more likely to be the case for Portugal (Madeira) than for Estonia (Tartu).

Health inequalities are indeed constantly changing, driven by the social dynamics of a country. Many paradoxes are hidden in this truth. For Russia, the standard pattern of mortality by education applies to both men and women, in spite of contrasting risk factor distributions, with many "anomalies"—for instance, in obesity

and lipid profiles among men.[4] For Estonia, highly educated adults, compared with those with less education, gained a considerable advantage during the 1990s, in terms of mortality from circulatory diseases and total mortality.[5] According to Lawlor and colleagues, the children of these highly educated parents may paradoxically have the poorest insulin resistance profile. We cannot say how much of a paradox this really is, however, as we know nothing about whether their parents as children also had a poor insulin profile.

Genetic, fetal, and early childhood factors should all be relevant in determining insulin resistance. In Lawlor and colleagues' study, parental education was important for insulin resistance among prepubertal and postpubertal children. Parental education can be taken as a measure of social circumstances when their children were born—that is, before the collapse of the Soviet system. Income was measured in 1997-2000; for Estonia this means when new food markets had opened up. In mutual adjustments, education but not income had an independent effect; thus it seems unlikely that it is consumption of "burgers, crisps, and processed food" that is creating the pattern of high insulin resistance among children of highly educated parents. We also noted that, in this study, children of highly educated fathers in Estonia had a 200 g lower birth weight than others, consistent with their higher insulin resistance.

Anomalies such as those reported for Estonia and Portugal may be of special significance, as they point towards gaps in our understanding and warn against too simplistic a view of health inequalities. Correctly understanding the development of health and mortality in the formerly communist led countries of central and eastern Europe is likely to challenge (and has already challenged) many cherished epidemiological "truths."

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Changes in dietary fat and declining coronary heart disease in Poland: population based study

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We previously described a rapid decline in mortality due to coronary heart disease in Poland between 1991 and 1994, corresponding with increases in the ratio of polyunsaturated fat to saturated fat in people's diet and fruit consumption.[1] The changes in food consumption followed changes in economic policy, including reductions in subsidies for dairy and other animal fats. We describe subsequent trends and use data from cohort studies to estimate the contributions from smoking and diet to these changes.

Methods and results

Mortality due to coronary heart disease has continued to fall in Poland in both sexes and across educational levels. Compared with 1990, by 2002 for the age band 45-64 years it had fallen by 38% in men (340 per 100 000 to 212/100 000) and by 42% in women (76/100 000 to 44/100 000). By 1999 (the latest year with comparable data), consumption of saturated fat had fallen by 7% (44.8 g/day to 41.5 g/day), consumption of polyunsaturated fat had risen by 57% (14.8 g/day to 23.3 g/day), and the ratio of the two had increased by 70%. Per head, consumption of imported fruit rose from 2.8 kg/year in 1990 to 8.8 kg/year in 1991 and 10.4 kg/year in 1999.

From 1990 to 2004, the prevalence of smoking in Poland fell among people younger than 40 but increased from 23.1% to 35.2% among women aged 40-60. Among men, it fell from 51.1% to 46.1% at age 40-49, from 51.1% to 46.1% at 50-59, and from 34.3% to 28.2% over 60. If we assume a relative risk of 3 for current smoking then a reduction in prevalence of 5% (from 55% to 50%) would reduce the risk of coronary heart disease by about 5%. This, and similar declines in rates of coronary heart disease among men and women, indicates that changes in smoking contributed little to falling rates of coronary heart disease.

In the prospective nurses' health study, the ratio of dietary saturated and unsaturated fats was inversely related to the incidence of coronary heart disease.[2] The change in coronary mortality in Poland was similar to that predicted by the slope relating this ratio to the risk of coronary heart disease in the study (figure). The increased consumption of imported fruit between

Two additional references (w1 and w2) are on bmj.com

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