The target of WHO to lower the mortality rate is achievable – but the requisite is to lower the level of serum cholesterol

Key Findings

- The cholesterol level of the population reached its highest peak in the 1970s.

- The level declined until 2007 by as much as 20%, but then started to increase again by 2–3 percent.

- The main reason for the decline of serum cholesterol levels is the diet becoming healthier.

- The slight increase in the serum cholesterol levels in the last few years is caused by the increased intake of saturated fats.

- The incidence of coronary heart disease can be reduced further by lowering the serum cholesterol level.

INTRODUCTION

The World Health Organization (WHO) has published its action plan for the prevention and control of noncommunicable diseases for 2013–2020. The action plan includes proposals for health policy and practical action. The objective is for the member states to reach as many as possible of the nine international targets pertaining to the prevention and treatment of noncommunicable diseases by the year 2025. The attainment of the said targets is being monitored through 25 indicators, which represent risk of premature mortality, levels of noncommunicable disease risk and protective factors as well as the potential for and realisation of prevention and treatment. The baseline of the monitoring is year 2010.

The WHO action plan is primarily focused on four important disease groups: cardiovascular diseases, cancer, diabetes and chronic respiratory diseases. Disease prevention focuses on lifestyle factors: smoking, unhealthy diet, lack of physical activity, and harmful use of alcohol.

An evaluation has been conducted in Finland on the current state and previous development of noncommunicable diseases and their risk factors to estimate how realistic the targets set by WHO are for Finland. At the same time, national challenges have been identified along with possibilities for improving the prevention of noncommunicable diseases.

This "Data Brief" publication reports WHO's indicators 15, 17 and 18, pertaining to the population's serum cholesterol level, intake of saturated fat and implementation of dyslipidemia drug treatment.

TRENDS IN SERUM CHOLESTEROL IN FINLAND

The average serum cholesterol level of the Finnish population in the early 1970s was record high, almost 7 mmol/L. After that, the level had dropped by approximately 20% by 2007. According to the FINRISK survey of 1982, approximately 80% of the population had a cholesterol level higher than the recommended 5 mmol/L. By 2007, the percentage of the population exceeding the recommended level had dropped to roughly 56%, but by 2012 the number had once again climbed to approximately 60% (Figure 1). Similar changes were also evident in the average cholesterol level of the population: a steep decline between 1982 and 2007 and then a 2–3 percent rise between 2007 and 2012 (Figure 2).

Figure 1. **The percentage (%) of men and women with a high serum cholesterol level (≥5 mmol/L), age group 25–64.**
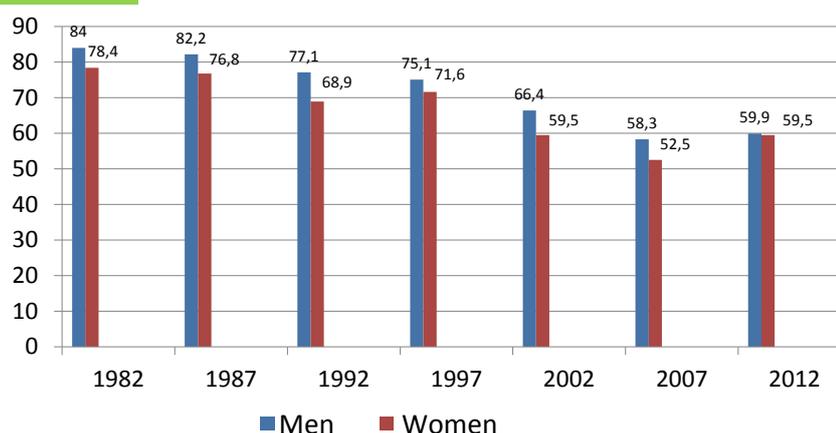
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WHO targets for 2010–2025

1. A 25% relative reduction in risk of premature mortality from cardiovascular diseases, cancer, diabetes and chronic respiratory diseases.
2. At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context.
3. A 10% relative reduction in prevalence of insufficient physical activity.
4. A 30% relative reduction in mean population intake of salt/sodium.
5. A 30% relative reduction in prevalence of current tobacco use in persons aged 15+ years.
6. A 25% relative reduction in the prevalence of raised blood pressure.
7. Halt the rise in diabetes and obesity.
8. At least 50% of eligible people receive drug therapy and counselling to prevent heart attacks and strokes
9. An 80% availability of the affordable basic technologies and essential medicines required to treat major noncommunicable diseases.

## WHO indicators for cholesterol, the intake of saturated fats, and lipid-lowering drugs

Age-standardized mean proportion of total energy intake from saturated fatty acids in persons aged 18+ years

Age-standardized prevalence of raised total cholesterol among persons aged 18+ years (defined as total cholesterol ≥5.0 mmol/l or 190 mg/dl); and mean total cholesterol concentration

Proportion of eligible persons (defined as aged 40 years and older with a 10-year cardiovascular risk ≥30%, including those with existing cardiovascular disease) receiving drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes

It should be noted that these indicators cannot be created from the Finnish information sources exactly in the same form.

Figure 2. **Average serum cholesterol levels (mmol/L) among men and women of 25 to 64 years of age.**
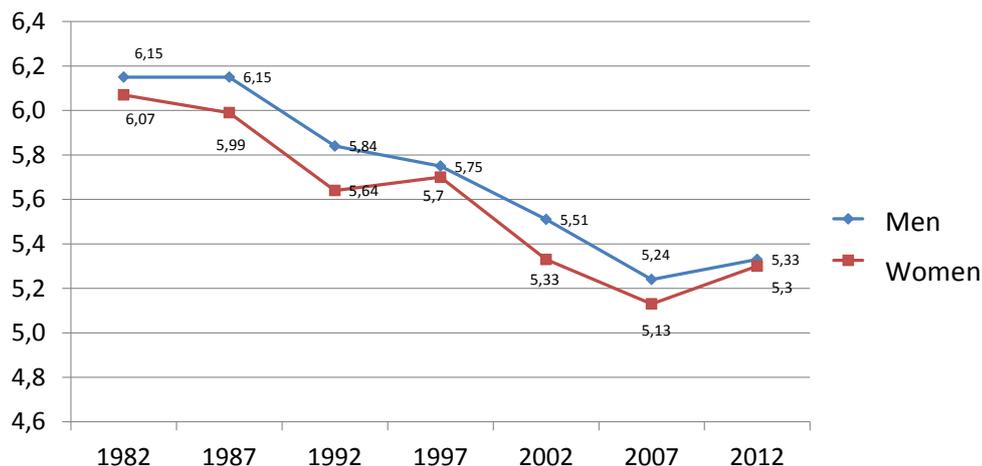
The main reason for the decline of serum cholesterol levels is the diet becoming healthier. The proportion of saturated fats from total energy intake dropped from approximately 20% in 1982 to 12% in 2007, with the proportion of polyunsaturated fats increasing (Figures 3 & 4). The main factor here has been a decrease in the use of milk fat, which has been substituted by liquid vegetable oils. A decrease in the amount of cholesterol and trans fats consumed with food has also had some impact. The slight increase in the cholesterol levels between 2007 and 2012 was purely down to a change in fat type. Milk fat-based foods became more popular at the expense of vegetable oil-based foods.

Figure 3. **The daily intake of fat and fatty acids among men of 25–64 years of age as a percentage of total energy intake.**
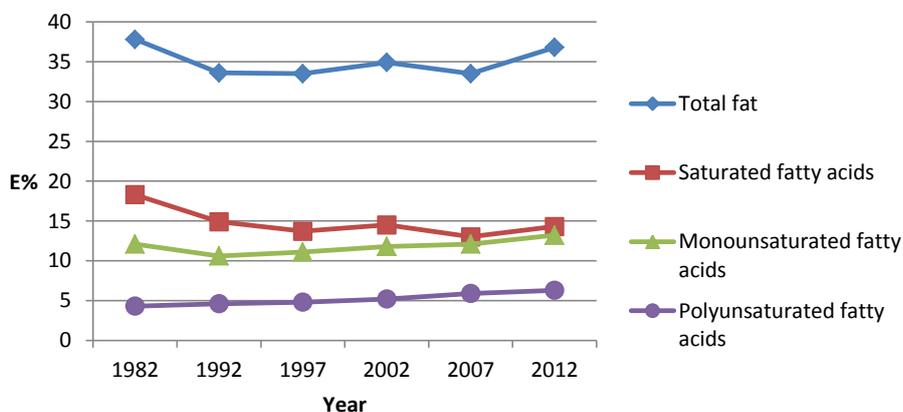
The materials used

THL conducts the National FINRISK Study every five years. The purpose of this set of surveys is to monitor the risk factor levels of cardiovascular diseases as well as other non-communicable diseases, and the changes therein in Finland.

Dietary information is based on the FINDIET survey implemented as a sub-sample of the FINRISK survey.

Figure 4.

The daily intake of fat and fatty acids among women of 25 to 64 years of age as a percentage of the total energy intake.
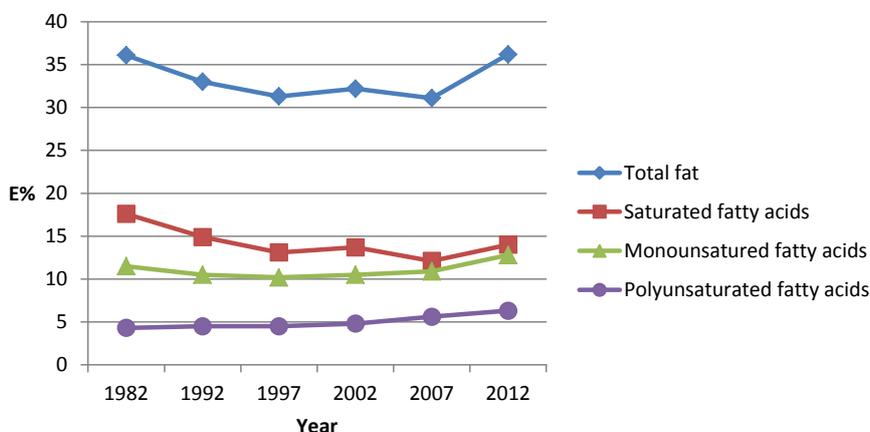
Cholesterol lowering medication has also played a small role in the reduction of the population's serum cholesterol level. The start of the use of statins in the late 1980s has lowered the average cholesterol level by 0.14 mmol/L for men and 0.06 mmol/L for women between 1982 and 2012.

In 2012, cholesterol lowering medication was used by 21% of men and 15% of women in the 35-74 age group. Cholesterol lowering medication was used by 80% of myocardial infarction patients, 85% of bypass patients, and 90% of PTCA patients. Ergo, medication is at a good level among heart disease patients. Nevertheless, there is still room for improvement when it comes to cholesterol lowering medication. In 2012, based on the FINRISK calculator, a third of the men aged 35–74 had at least a 10% risk of getting coronary heart disease within the next ten years. The total cholesterol level was below 5 mmol/L for less than a third of them. Respectively, for 7% of women the risk was higher than 10%. The total cholesterol level was below 5 mmol/L for 18% of them. This high-risk group would benefit from medication.

Since 1972, lower serum cholesterol levels have been the single most important factor in the decline in deaths caused by heart disease. This alone explains almost half of the decline in the mortality rate. If the intake of saturated fats could be lowered from the current 14% to the recommended 10% or less, and the intake could be substituted by polyunsaturated fats, the cholesterol level in blood would drop by 6%. This would bring down the average cholesterol level of the population to approximately 5 mmol/L. This, in turn, would reduce coronary heart disease by 12–18 percent. There are approximately 22,000 new CHD cases every year in Finland, so these measures would prevent 2,600–3,900 CHD cases per year.

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SUMMARY

Significant dietary changes have taken place in Finland in the last decades. This has resulted in a decline of approximately 20% in the population's serum cholesterol level. Lower cholesterol level has been a key factor in reducing CHD in Finland. For the majority of the population, however, the cholesterol level is higher than the recommended 5 mmol/L. The recommended dietary changes would result in considerable health benefits. Even so, it appears that the intake of saturated fats contrary to the recommendations has increased in the last years, with the cholesterol levels simultaneously rising. By targeting the cholesterol lowering medication on the high-risk groups, the risk of getting CHD or dying could be reduced further.