



THE NORTH KARELIA PROJECT – PIONEERING WORK TO IMPROVE NATIONAL PUBLIC HEALTH

Introduction	2
Main results	3
Lessons from the Project	5
Conclusions	6

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Introduction

Finland was a very poor country before World War II. Also many post war years were still difficult, but gradually the standard of living started to improve. The serious infectious disease epidemics were much brought under control, but new problems emerged. Statistics showed in the 1960's that coronary heart disease (CHD) mortality rates, especially among men, were the highest in the world.

In the beginning of the 1970's this started to raise public concern. At that time much less was known about causes of coronary heart disease. It was commonly related to the ageing of the population. However, already at that time some studies had pointed out some likely causal risk factors. While bacteria and viruses were behind the infectious diseases, the risk factors of these new epidemics seemed to relate to some behaviours, especially to diet and smoking.

In response to the local petition to get urgent and effective help to reduce the exceptionally great burden of coronary heart disease in the in the Province of North Karelia, the North Karelia Project was launched in 1972. In co-operation with local and national authorities and experts, as well as with WHO, the Project was formulated and implemented to carry out a preventive intervention to reduce the risk factors in the population. For that the main emphasis was to change diets and reduce smoking. The work was done through local community organizations and by the local people themselves. Comprehensive activities were used, involving health and other services, schools, NGO's, innovative media campaigns, local media, supermarkets, food industry, agriculture etc.

The Project included a comprehensive evaluation, and acted as a major demonstration programme for national and international applications. Over the years the scope of the Project was enlarged to include broader objectives of integrated prevention of major chronic diseases and health promotion, as well as prevention of risk related lifestyles in childhood and youth.

After the original project period (1972–77) the experiences have actively been applied for national action. Numerous activities have been launched involving e.g. health services, schools and NGO's. National expert recommendations and programmes have been prepared. Mass media and industry have been involved. Legislation and other public policy have supported the development that has been monitored carefully.

Main results

The published results of the North Karelia Project show how over the 25-year period major changes took place in the levels of the target risk factors in North Karelia. Among the male population in North Karelia, smoking greatly reduced and dietary habits markedly changed. In 1972, 52% of middle-aged men in North Karelia smoked. In 1997 the percentage had fallen to 31%.

In the early 70's use of vegetable oil products was very rare; now it is very common. In 1972 about 90% of the population in North Karelia reported that they use mainly butter on bread. Today it is less than 5%. The dietary changes have led to about 17% reduction in the mean serum cholesterol level of the population. Elevated blood pressures have been brought well under control and leisure time physical activity has been increased. Among women, similar changes in dietary habits in cholesterol and in blood pressure levels took place. At the same time, however, smoking somewhat increased, but from a low level.

These risk factor changes were in the 70's in North Karelia significantly greater than in the original comparison area. With national action the changes have thereafter concerned all Finland. In the 80's some leveling off took place in the trends in North Karelia, but thereafter remarkably great changes took place concerning particularly dietary changes. This has been associated with major reductions in serum cholesterol levels.

By 2002 the annual age adjusted mortality rate of coronary heart disease in the middle-aged (below 65 years) male population in North Karelia had reduced about 82% from the pre-program years (1967–71). Since the 80's the favourable changes began to take place also in all Finland. By 2002 the annual CHD mortality among men in all Finland had reduced appr. 75%. At the same time the lung cancer mortality has also reduced, more than 70% in North Karelia: and nearly 60 % in all Finland.

With greatly reduced cardiovascular and cancer mortality the all cause mortality has reduced more than 50 %, leading also to greater life expectancy: approximately 7 years for men and 6 years for women. Associated with favourable risk factor and lifestyle changes, the general health status of the people has greatly improved.

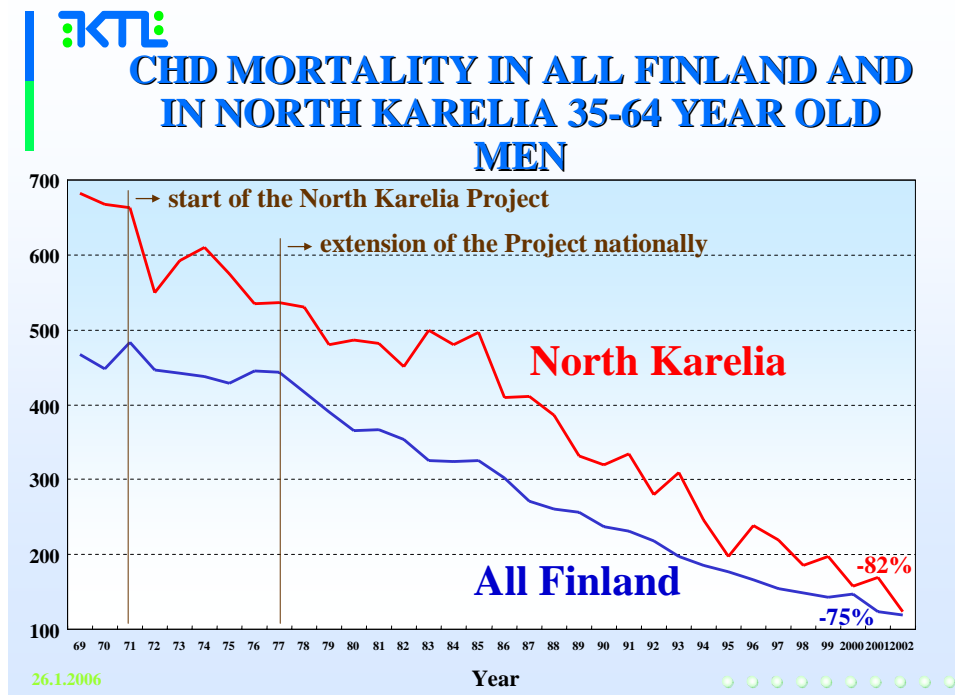
A separate analysis has shown that most of the decline in CHD mortality was due to reduction in the incidence and can be explained by the changes of the target risk factors in the population. The reduction in serum cholesterol level of the population due to general dietary changes has been the strongest contributor.

TABLE 1 Mortality changes in North Karelia in 1970–1995 (per 100 000, 35–64 years, men, age adjusted).

	Rate in 1970	Change in 1970–1995
All causes	1 509	-49%
All cardiovascular	855	-68%
Coronary heart disease	672	-73%
All cancers	271	-44%
Lung cancers	147	-71%

TABLE 2 Risk factor changes in North Karelia 1972–1997 (30–59 years).

Year	Men			Women		
	Smoking	S-Cholesterol mmol/l	Blood pressure mmHg	Smoking	S-Cholesterol mmol/l	Blood pressure mmHg
1972	52	6.9	149/92	10	6.8	153/92
1977	44	6.5	143/89	10	6.4	141/86
1982	36	6.3	145/87	15	6.1	141/85
1987	36	6.3	144/88	16	6.0	139/83
1992	32	5.9	142/85	17	5.6	135/80
1997	31	5.7	140/88	16	5.6	133/80



Lessons from the Project

The North Karelia Project has not only contributed to a dramatic public health improvement in Finland, but it has also been internationally a pioneering action to show how the modern epidemics of cardiovascular diseases can be effectively reduced by population based prevention involving general lifestyle changes.

What were the keys to success? Obviously, several factors were important. The cardiovascular problem was bad in the early 70's, there was common concern. The project activities were built upon this. The theoretical frameworks were carefully outlined, in collaboration with WHO and other leading experts. This concerned both the strategy on risk factors and the social and behavioural frameworks.

A key for success was community organization: working within the community with its numerous organizations and with strong people's involvement. Within the overall science-based framework the intervention was flexible, based on continuous monitoring and feedback and taking advantages of the naturally occurring possibilities.

The intervention used multiple strategies: from innovative media and communication activities and systematic involvement of primary health care (especially general practitioners and public health nurses) to environmental changes, collaboration with food industry and policy changes. The project worked in close collaboration with national health authorities; its activities benefited from and contributed to national health policy.

Long term sustainable activity was also based on strong leadership and appropriate institutional basis. The overall national co-ordination has been at the National Public Health Institute (KTL) which is linked with the Ministry of Social Affairs and Health. Finally, the importance of international collaboration should be emphasized: The project has taken advantages of international experiences and programmes (especially those of WHO) and also much contributed to those programmes.

Conclusions

The experiences and results of the North Karelia Project in Finland show how a well-planned and determined community based programme can have a major impact on lifestyles and risk factors, and that such a development really leads quite rapidly to reduction in cardiovascular rates in the community. Furthermore, they demonstrate the strength of community-based approach in changing the people's risk factors as well as give practical experience in organizing such activities.

The experiences also show how a major national demonstration project can be a strong tool for favourable national development. The experiences of the Project have actively contributed to a comprehensive national action with very good results. The decline in heart disease mortality during the last few years has been in Finland one of the most rapid in the world and the overall health of the adult population has greatly improved.

Nowadays chronic diseases and especially cardiovascular diseases are responsible for approx. 60% of all deaths in the world. They represent the overwhelming health burden in the industrialized countries and a rapidly growing problem in the developing countries. At the same time they are an area where major health gains can be achieved. In most of the developed world three out of four deaths are due to CVD, cancer, accidents and other violent causes. Globally CVD is responsible for every third death and coronary heart disease is the number one killer in the world.

In this situation the North Karelia project results and experiences show how effective interventions on risk related lifestyles is possible and pays off in greatly reduced disease rates and improved health of the population. This kind of intervention is clearly the most cost effective and sustainable approach to tackle the problem – clearly of great importance especially for the developing world.

Following the model of North Karelia Project, numerous community-based projects and national prevention programmes are under way in many countries of the world, particularly related to the WHO programmes. Thus experiences of the North Karelia Project will ultimately help different parts of the world to start controlling the modern epidemics of chronic diseases and tell us more about the usefulness of different intervention approaches in different cultural settings.