

SUCCESSFUL STRATEGIES TO INFLUENCE NATIONAL DIETS: THE FINNISH EXPERIENCE

USPEŠNI PROGRAMI SPREMINJANJA PREHRANSKIH NAVAD PREBIVALSTVA: FINSKE IZKUŠNJE

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Abstract

The article describes the global background and the historical development in Finland for action to influence diets for prevention of cardiovascular and other major chronic diseases. The work in Finland from the North Karelia Project to national action is described. The results show major changes in population diets and in blood cholesterol levels. This development has in 30 years been associated with a 82 % reduction in North Karelia and 75 % reduction in all Finland in the age adjusted annual mortality of coronary heart disease in working age male population. The article discusses the experiences and emphasizes comprehensive strategies to promote availability of healthier food choices, the role of good monitoring and the need for supportive public policy. The experience in Finland gives strong supportive evidence for the approaches of the WHO Global Strategy on Diet, Physical Activity and Health.

Key words: diet, nutrition, prevention, policy, heart diseases

Izvirni znanstveni članek
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Izvleček

V prispevku so opisana svetovna izhodišča in zgodovinski potek dejavnosti in ukrepov, ki so jih sprejeli na Finskem za spremembo prehrane in preprečevanje srčno-žilnih bolezni in drugih pomembnih kroničnih bolezni. Predstavljene so dejavnosti, ki so potekale na Finskem, vse od projekta Severne Karelije do programov na nacionalni ravni. Rezultati kažejo, da je prišlo do bistvenih sprememb v prehrani, kar se kaže v vrednostih holesterola v krvi prebivalstva. V obdobju 30 let se je tako v Severni Kareliji starostno standardizirana umrljivost zaradi koronarne bolezni med zaposlenimi moškimi prebivalci znižala za 82%, v vsej državi pa za 75%. Avtor predstavlja dosedanje izkušnje, poudarja pomen celostnih ukrepov za boljšo dostopnost zdravih živil ter opisuje vlogo ustreznega spremljanja ukrepov in podpore prebivalstva. Finske izkušnje potrjujejo pravilnost načel Globalne strategije SZO na področju prehrane, telesne dejavnosti in zdravja (WHO Global Strategy on Diet, Physical Activity and Health).

Ključne besede: prehrana, preprečevanje, ukrepi, bolezni srca

Introduction

During the last few years World Health Organization has published statistics that show how chronic noncommunicable diseases (NCD) have become greatest cause of mortality worldwide. While only a couple of decades ago NCDs were mainly a problem of the industrialized countries, now majority of deaths also in the developing world are due to NCDs. According to latest estimates some 60% of all deaths in the world are due to NCDs. About half of them are cardiovascular (1).

Faced with this rapid health transition and new global public health burden, WHO adopted in 2000 a Global strategy on NCD Prevention and Control (2). This strategy acknowledges the above mentioned development, but also recognizes that available medical evidence gives great potential for prevention and control of NCDs.

The WHO strategy emphasizes primary prevention that should target major causal risk factors that are prevalent all over the world. The strategy concentrates on unhealthy diet, physical inactivity and tobacco use - behavioural factors that are common to several major NCDs. Following this strategy WHO has with its Member States successfully completed negotiations for a Framework Convention on Tobacco Control - FCTC (3). While FCTC will be a key instrument for global tobacco control, influencing diets and physical activity globally will be a more complicated challenge, but also area where probably the greatest global public health gains can be achieved.

With this background World Health Assembly passed in 2002 a resolution asking the Director General to prepare a global Strategy on Diet, Physical Activity and Health. After two years of background work and numerous consultations with Member States and various stakeholders the strategy was presented, discussed and unanimously adopted in May 2004 by the World Health Assembly (4).

After adoption of a Global Strategy much of the further work will take place in WHO regions. Because of the overwhelming importance of diet related NCDs for public health in Europe, the strategy is of particular importance to the European Region that has already carried out much work in this area. The WHO/EURO publication "Food and Health in Europe" is particularly relevant (5). The discussions around the WHO Global Strategy on Diet, Physical Activity and Health have shown how actions shifting from undernutrition to overnutrition and unbalanced nutrition and from clinical care to complex population based strategies and from medicine to

intersectoral activities face many difficulties. Many new concepts are encountered and there are large vested commercial interests that lobby for their case.

In this discussion many have asked for evidence, not only on the relationship between diet and chronic diseases, but also on the possibilities of successful interventions on population level. The following text provides the experience from Finland concerning such activity. In Finland a sustained and comprehensive national action has led to generally much healthier diets, to greatly reduced rates of CVD and many other NCDs and to much improved public health in the country.

From North Karelia to national action

Finland was, in and early 1970s, a country that had extremely high mortality rates of coronary heart disease (CHD) and of atherosclerotic cardiovascular diseases (CVD) as a whole. The rates for men were the highest in the world. At the same time Finnish researchers had been actively involved in international research that convincingly demonstrated the central role of elevated serum cholesterol as a risk factor, and its close links with certain aspects of the diet. The high blood cholesterol level and high saturated fat intake of the Finns was also known and was an obviously important explanation of the high CVD rates.

The North Karelia Project was started in 1972 as a response to public concern on the high CVD mortality and to build on the previous research results. When elevated serum cholesterol, related to diet, was considered to be a major risk factor that seemed to match with the Finnish situation, a logical thought was to start a demonstration project to develop and study methods to change the situation. Another target risk factor was elevated blood pressure, also related to dietary aspects, especially to salt intake. The province of North Karelia, with the worst situation, was as the initial project area. After good results and experiences of the initial 5-year period, the project actively started to contribute to the national development, while demonstration work in North Karelia still continued (6).

In the project in North Karelia, comprehensive, community-based strategies were developed and implemented to change the dietary habits to lower the cholesterol and blood pressure levels of the population. It was clearly seen that the dietary habits were deeply rooted in the community, in its cultural, agricultural, economic, etc., features. Thus, the action targeted the community instead of just high risk individuals and called for broad-range action from media campaigns

and community organization to collaboration with food industry and to agricultural reforms. Also, in the project a comprehensive evaluation was implemented that later on was developed to a national monitoring system for chronic disease prevention and health promotion.

With emerging results and experiences from North Karelia and with respective international development national action gradually accelerated. Several expert recommendations were given concerning the needed dietary changes for cholesterol lowering and heart disease prevention. At the same time, health education and awareness campaigns were started. Many nongovernmental organizations like the Finnish Heart Association became active, and the media were greatly interested. In the late 1980s, several specific national guidelines were given for dietary changes, cholesterol reduction, and prevention of CHD.

Increasing awareness led, particularly toward the end of 1980s, to many other national community participation programmes. Local heart associations, health services, other NGOs and became increasingly active. Development of instant fingertip cholesterol measurement technique increased cholesterol measurements and associated counseling widely, which undoubtedly contributed to major changes.

With greatly increased interest of the public and major national changes, industry also became actively involved. While in the 1970s industry had mainly resisted changes, in the late 1980s and 1990s they saw great potential and a growing new market. Thus, numerous new products, especially those with less fat and with increased proportion of unsaturated vegetable oil, were produced and marketed. "Low fat", "cholesterol lowering", "heart healthy" became fashionable slogans, promoted by commercial resources far beyond the resources health campaigns could use. Increasing the availability and marketing of heart-healthy choices made it much easier for people to comply with the health message of the experts.

Another very significant associated development took place in the 1980s. A new type of rape plant was developed that grew well in the northern climate of Finland and that was free of erucic acid. Research in Finland showed that this rapeseed oil was very effective in lowering cholesterol. Thus, there was a domestic, local heart healthy fat alternative. The new rapeseed oil and products using it became very quickly popular. For the first time, cooking with vegetable oil became fashionable in Finnish kitchens.

Especially during the later years, national policy decisions and legislation contributed to the changes, much facilitated by growing interest of the population.

Policy actions have reinforced the positive development. The legislative and other policy decisions have concerned, e.g., development of vegetable oil containing and low-fat spreads, fat and salt labeling of many food groups, quality of meals at schools and the army, etc. In connection with Finnish membership in the European Union, reforms were made that helped neutralize the taxation between dairy and vegetable oil fats (previously dairy fats were favored).

Favourable national change process was greatly supported by continuous feedback from national monitoring of health behaviour, risk factors and nutrition. This was carried out by the National Public Health Institute (KTL) that provided strong institutional focal point for the national preventive work.

Results

The changes in the North Karelian and Finnish diet and in respective cardiovascular and other NCD rates have been quite remarkable and reported in numerous publications (6-8).

In early 1970s most of Finns reported using mostly butter on bread, while in 2003 the proportion was only 4 %. This has contributed significantly to the decrease in saturated fat intake. Soft margarines and butter-oil mixtures as well as low-fat spreads have replaced butter on bread, which used to be the main carrier of fat in the Finnish diet. In early 1970's people used mainly fatty milk, whereas in 2003 only 3 % used fatty milk, 36 % low fat milk, 26 % skim milk and 26 % no milk. Low-fat milk, for instance, became the standard milk used in schools and in catering as early as the 1970s. Later on skim milk gained popularity, and today, girls and women prefer it.

While only 1-2% of people used vegetable oil for cooking in 1972, about 57% reported using mainly vegetable oil in cooking in 2003. The first study on sodium excretion among elderly men in Finland showed that mean daily salt intakes were about 14-15 g. The salt intake has slowly decreased in the population, currently averaging about 11 g in men and 7 g in women. Use of fruits and vegetables has increased threefold.

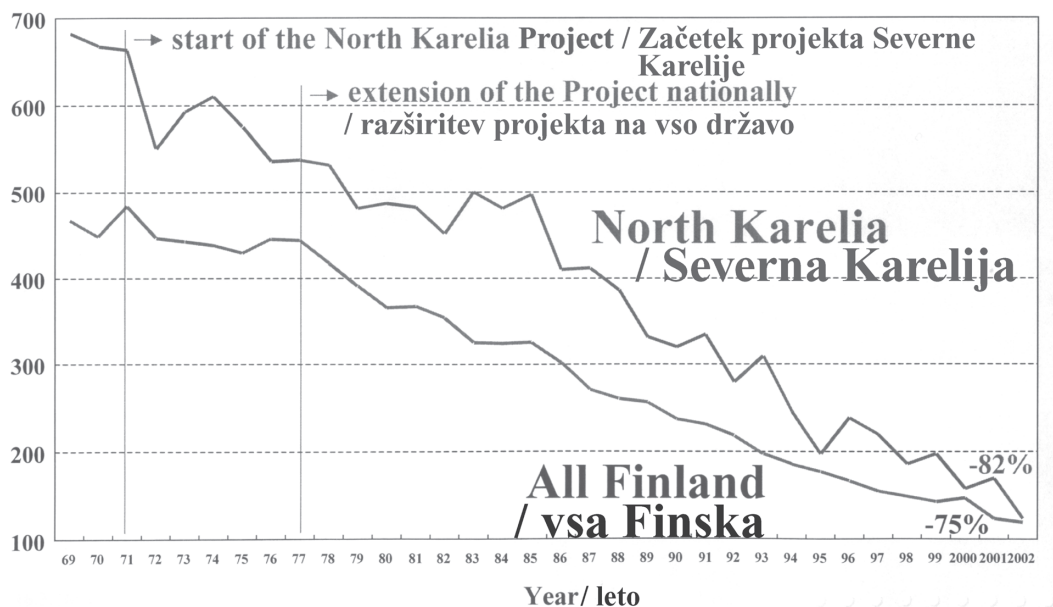
As a result of the nutrition programme, the share of saturated fats from energy was decreased from 21 % in 1972 to 14% in 1997, and the share of polyunsaturated fats increased from 3,5% to 5% respectively. This has resulted in a substantial increase in the ratio of polyunsaturated to saturated fats (P/S ratio). Also the energy percentage from total fat decreased from 39% to 33%. The share of trans fatty

acids from energy was only 0.9% in men and 0.8% in women in 1997 (9).

The dietary changes have been associated with a major decline in the population's cholesterol levels. The serum cholesterol levels of both genders have decreased by

The annual age-standardised mortality rate of ischaemic heart disease (age group 35-64 years) has decreased by 82% in North Karelia and by 75% in the whole country in 30 years from 1969-71 to 2002 (Figure 1). Table 1 shows changes in all Finland in age adjusted mortality rates among 35-64 year old population from 1969-71 to 2000-02.

CHD MORTALITY IN ALL FINLAND AND IN NORTH KARELIA 35-64 YEAR OLD MEN/ UMRLJIVOST ZARADI KRONIČNIH NALEZLJIVIH BOLEZNI MED MOŠKIMI STARIMI 35 DO 64 LET, V VSEJ FINSKI IN SEVERNI KARELIJI



Slika 1. Starostno standardizirana umrljivost zaradi koronarne bolezni srca med moškimi prebivalstvom, starim med 35 in 64 let, Severna Karelija in vsa Finska, 1969—2002.

Figure 1. Age adjusted mortality rate of coronary heart disease in North Karelia and in all Finland among 35-64 years old male population from 1969 to 2002.

18 % in North Karelia between 1972 and 1997. The cholesterol levels have also decreased markedly in other areas monitored in Finland. At the same time, diastolic blood pressure has decreased by 5% in men and 13% in women (10).

The risk factor and coronary heart disease mortality changes were greater in North Karelia than in all Finland during the initial Project period in the 1970's. Thereafter the national changes have accelerated. It has been estimated that bulk of the decline in mortality from

Tabela 1. *Spremembe v starostno standardizirani umrljivosti prebivalcev Finske starih med 35 in 64 let, v obdobju od 1969 - 1971 do 2000 - 2002.*

Table 1. *Change in age-adjusted annual mortality rates from 1969-1971 to 2000-2002 among 35-64 year old population in Finland.*

Mortality from	Changes from 1969-1971 to 2000-2002	
	Men	Women
Cardiovascular Diseases	-70	-75
Coronary Heart Disease	-74	-75
Cerebrovascular Diseases	-69	-74
All cancers	-49	-22
Lung cancer	-69	+12
All causes	-54	-46

ischaemic heart disease from 1972 to 1992 can be explained by risk factor changes (11). The major contributor was the reduction in the population level, obviously as a result of the previously described dietary changes.

Discussion

The process that has taken place in Finland during the last 30 years gives a good example of the development from research to public policy for lowering the high cholesterol levels through general dietary changes, to cut down the heart disease rates. This process has generally been a very positive one, but many difficulties and constraints have been encountered and lessons learned.

Planning of the project in North Karelia was based on the idea that dietary habits are deeply rooted in the cultural and economic features of the community. Thus, the intervention target was the community rather than individuals. In practice, broad-range action - from innovative media campaigns to collaboration with the food industry and to agricultural reforms - was introduced in the Project. A comprehensive evaluation system was also designed that subsequently was developed into a national monitoring system for chronic disease prevention and health promotion.

Long-term and credible nutrition information is naturally an important element in any successful nutrition programme. People not only need information on the links between diet and health, but also clear messages about the practical and culturally appropriate means to change their diet. Education programmes should not only give information, but also to teach the skills to make the needed changes. Furthermore, good media

programmes send persuasive messages through various strategies (e.g. using role models).

But information alone is not enough. A crucial factor behind the results in Finland has been comprehensive efforts to influence environments – “to make healthier diets easier for people”. This has been carried out by various community actions, persuasive messages, innovative collaboration and public policies.

Another important issue is long term leadership and institutional base. In the Finnish case the role of the National Public Health Institute – KTL has been key. These programmes need long-term support and credible, competent agencies to carry them out. Such agencies provide leadership, expert advice and valuable monitoring of the trends. Expertise in nutrition, epidemiology and communication skills is needed. Although a focal point is required for major long-term nutrition education programmes, broad collaboration and multiple message sources are needed. Innovative media messages should link closely with the ongoing community and policy activities.

The Finnish experience gives strong support to the idea that population rates of CVDs and NCDs can be influenced by changes in dietary habits. The Finnish work has targeted especially the strongest diet related risk factors: blood cholesterol and hypertension. The intervention in Finland did originally not much target obesity, because the obesity rates were low among the men with highest risk, who had, however, very high levels of blood cholesterol and blood pressure.

Only during the last few years greater attention is put on increasing rates of obesity. Obesity is another biological risk factor for CVD, diabetes and other NCDs. Since obesity is influenced through diet and physical activity, it is seen important that the target on population

level remains healthy diet and physical activity that influence favourably a set of major NCD risk factors, including obesity.

Developing a national food and nutrition policy, as experienced in Finland, is ultimately a matter of a long social change process. Scientific evidence based on basic and applied research is the starting point. Demonstration projects in communities and other settings show how respective changes can be implemented in real life. After the evidence and development of feasible methods, expert groups and governmental committees give their recommendations about healthy diets. The first to respond to the new medical knowledge are often active health organizations, like heart associations. They launch awareness campaigns - to make people aware of the links (e.g. between diet, cholesterol and heart disease) and of the possibilities to act upon this knowledge.

As in Finland, gradually more and more partners in the community/society respond and start to participate in the action. This concerns other NGOs and also health services, schools, workplaces, and so forth. The action includes, for example, various kinds of health education, screening programmes and patient consulting. With increased interest of the public (i.e. consumers), the food industry starts to respond. The industry sees that there is a market (e.g. for cholesterol-lowering or weight reducing food items) and health claims have an increased weight in marketing. Usually at this stage of this development, major policy decisions and legislation become feasible and useful to strengthen the change process. Because of conflicting interests, public administration usually works slowly and major decisions are made only when the change process has well progressed.

Thus the major lesson from the Finnish experience is that major favourable dietary changes in the nation are possible - and obviously as result of a comprehensive action. The results also show how dramatic public health changes can take place, obviously much resulting from general dietary changes. In view of the high costs of

clinical medicine these kind of population based approaches with only modest expenditures can be most cost effective way for substantial public health gains. It is not easy to single out individual components behind the success. The previous text has discussed some major elements. Sound theory, broad collaboration and dedicated leaderships have been key. It has also been of crucial importance that the work has targeted environmental changes, policy decisions and involved many stake holders. In such the Finnish experience is very much in line with the adopted WHO strategy and provides well documented evidence in favour of such strategy.

References

1. WHO. World Health Report 2002. Reducing risks, promoting healthy life. World Health Organization, Geneva, 2002.
2. WHO. Global strategy for the prevention and control of noncommunicable disease. World Health Organization. WHA/A53/14. 2000.
3. WHO. WHO Framework convention on tobacco control. World Health Organization, WHA/A56/8.2003.
4. WHO. Draft global strategy on diet, physical activity and health. World Health Organization, EB113/44 Add.1. 2004.
5. WHO. Food and Health in Europe: a new basis for action. WHO Regional Publications, European Series No. 96. WHO/EURO, Copenhagen 2004.
6. Puska P, Tuomilehto J, Nissinen A, Vartiainen E, eds. The North Karelia Project. 20 Year Results and Experiences. Helsinki: University Press, 1995;107-17.
7. Puska P, Vartiainen E, Tuomilehto J, Salomaa V, Nissinen A. Changes in premature deaths in Finland: successful long-term prevention of cardiovascular diseases. Bull. World Health Org. 1998;76:419-25.
8. Puska P. Nutrition and mortality: the Finnish experience. Acta Cardiol. 2000; 55:213-20.
9. Pietinen P, Lahti-Koski M, Vartiainen E, Puska P. Nutrition and cardiovascular disease in Finland since the early 1970s: a success story. J. Nutr. Health Aging 2001;5:150-9.
10. Vartiainen E, Jousilahti P, Alfthan G, Sundvall J, Pietinen P, Puska P. Cardiovascular risk factor changes in Finland, 1972-1977. Int J Epidemiol 2000; 29:49-56.
11. Vartiainen E, Puska P, Pekkanen J, Tuomilehto J, Jousilahti P. Changes in risk factors explain changes in mortality from ischaemic heart disease in Finland. Br Med J 1994;309:23-7.