

Title of Intervention and Website: The North Karelia Project

Intervention Strategies: Campaigns and Promotions, Provider Education, Group Education, Individual Education, Supportive Relationships, Environments and Policies

Purpose of the Intervention: To reduce cardiovascular disease risk factors, mortality and morbidity

Population: Community-wide with focus on middle-aged men

Setting: County of North Karelia, Finland; school-based, worksite-based, community-based, home-based

Partners: Physicians, nurses, media, food industry, teachers, government officials, parents, churches, health departments, local organizations

Intervention Description:

- Campaigns and Promotions: Campaign media were distributed in the community, including leaflets, posters, stickers, signs, father's day cards, magazines and television ads. Health topics included nutrition, physical activity, tobacco use and alcohol use. Local and district newspapers printed series of articles including WHO meeting notes and survey results. The school-based program aired fifteen episodes of the "Keys to Health" TV program. Schools also distributed program magazines. Local data were displayed in schools.
- Individual Education: In worksite settings, health screening results were distributed to workers along with heart healthy recommendations.
- Provider Education: Local health care providers attended 1-2 day training sessions every 6 months. The training focused on practical program tasks, general cardiovascular information and prevention, performance of new tasks, measurement techniques, internal follow-up and worker cooperation. Each doctor was personally visited by program staff and asked to help reduce risk factors.
- Group Education: Group health education, cooking and anti-smoking sessions were provided throughout in community, worksite and school settings. The education sessions included information, skills training and role-playing.
- Supportive Relationships: Individual and group nutrition counseling was offered to community members. In the school program, nutritionists gave advice and counseling to children using screening results and visited the homes of those at most risk. Children found smoking were sent to school nurse for counseling.
- Environments and Policies: The local food industry began producing low-sodium products for distribution in the community. Schools implemented nutrition policies regarding use of healthier ingredients and reduction of sodium content.

Theory: Behavior Modification, Communication-Behavior Change, Community Organization. Diffusion of Innovation, Theory of Reasoned Action, Lewin's Classical Field Theory, Social Learning Theory, McGuire's Classical Communication-Persuasion Model

Resources Required:

- Staff/Volunteers: Educators, staff to prepare educational materials, nutritionists, staff to conduct work-site and school screenings, staff to prepare media messages
- Training: Volunteers and worksite staff were trained to conduct screening activities, school nutrition staff were trained in new nutrition protocol
- Technology: Computers, printers, media development
- Space: Education session space, screening space
- Budget: Not mentioned
- Intervention: Health education materials (written and audiovisual), media messages (newspaper, TV, radio, posters, leaflets, stickers, cards, etc), screening space and materials
- Evaluation: Surveys, clinical measures (blood pressure cuff, blood collection and analysis, thiocyanate testing supply)

Evaluation:

- Design: Quasi-experimental study
- Methods and Measures:
 - Community program: Self-administered questionnaire was completed at home and measurements of height, weight, blood pressure, cholesterol test, and thiocyanate were completed at the examination site
 - School program: Parent questionnaire covered personal background, health knowledge, health attitudes, health problems at home
 - School program: Child questionnaire included smoking habits, dietary habits, health behaviors, health attitudes, emotional consequences
 - School program: Physical examination (child) including urine and blood samples (24-hr sodium excretion, total serum cholesterol), blood pressure
 - School program: Content of the school diet was calculated for one month based on the stock book kept by the school kitchen staff

Outcomes:

- Short Term Impact: An analysis at year 3 of the community-wide intervention showed a significant reduction in Coronary Heart Disease Risk scores in both men and women. Men had significant reduction in cholesterol level, cigarettes per day and blood pressure. Consumption of fat, through changes in milk consumption and butter consumption decreased markedly. At year 10, analysis showed a significant reduction in reported smoking for men. Men maintained a significant reduction of cholesterol. Both men and women had a significant reduction in blood pressure. At 15 years, smoking rates for men were lower than nearby communities. Daily intake of fat was still significantly lower. An analysis of the school-based component showed significant positive trends in smoking, daily consumption of milk fat, cholesterol and risk factor knowledge (girls only).
- Long Term Impact: An analysis of the community intervention at 10 years showed a significant decrease in cardiovascular mortality among middle-aged men and women.

Maintenance: Not mentioned

Lessons Learned: Over the course of the study, the Finnish government adopted many of the policies and recommendations put forth by the program. Television programs were also aired nationally. This may have caused improvement among all citizens and weakened the apparent effect of the program. Direct costs were relatively limited because the program systematically and efficiently used existing resources. The researchers believe the lay opinion leaders were an important compliment to the overall intervention activities. The changes in the cardiovascular risk factors appear to be a consequence of persuasion, social support, and environmental changes. The disease was presented as a community burden.

Citation(s):

Kottke, T. E., A. Nissinen, et al. (1984). "Message dissemination for a community-based cardiovascular disease prevention programme (the North Karelia Project)." Scand J Prim Health Care **2**(3): 99-104.

Nissinen, A., J. Tuomilehto, et al. (1988). "From pilot project to national implementation: experiences from the North Karelia Project." Scand J Prim Health Care Suppl **1**: 49-56.

Pietinen, P., E. Vartiainen, et al. (1989). "Nutrition as a component in community control of cardiovascular disease (the North Karelia Project)." Am J Clin Nutr **49**(5 Suppl): 1017-24.

Pietinen, P., A. Nissinen, et al. (1988). "Dietary changes in the North Karelia Project (1972-1982)." Prev Med **17**(2): 183-93.

Pietinen, P., E. Vartiainen, et al. (1989). "Nutrition as a component in community control of cardiovascular disease (the North Karelia Project)." Am J Clin Nutr **49**(5 Suppl): 1017-24.

Pietinen, P., M. Lahti-Koski, et al. (2001). "Nutrition and cardiovascular disease in Finland since the early 1970s: a success story." J Nutr Health Aging **5**(3): 150-4.

Puska, P., J. Salonen, et al. (1983). "The North Karelia project." *Prev Med* 12(1): 191-5.

Puska, P., A. Nissinen, et al. (1983). "Ten years of the North Karelia Project: results with community-based prevention of coronary heart disease." *Scand J Soc Med* 11(3): 65-8.

Puska, P., J. T. Salonen, et al. (1983). "Evaluating community-based preventive cardiovascular programs: problems and experiences from the North Karelia project." *J Community Health* 9(1): 49-64.

Puska, P., E. Vartiainen, et al. (1982). "The North Karelia youth project: evaluation of two years of intervention on health behavior and CVD risk factors among 13- to 15-year old children." *Prev Med* 11(5): 550-70.

Puska P, A Nissinen, et al. (1985) "The Community-Based Strategy to Prevent Coronary Heart Disease: Conclusions from the Ten Years of the North Karelia Project" *Ann. Rev. Public Health* 6:147-93.

Puska P., J. Tuomilehto, et al. (1989) "The North Karelia Project: 15 Years of Community-based Prevention of Coronary Heart Disease." *Ann Medicine* 21: 169-173.

Puska, P., K. Koskela, et al. (1986). "Use of lay opinion leaders to promote diffusion of health innovations in a community programme: lessons learned from the North Karelia project." *Bull World Health Organ* 64(3): 437-46.

Puska, P. (1995). "Communication with the population: the North Karelia Project experience." *J Hum Hypertens* 9(1): 63-6.

Tuomilehto, J., P. Puska, et al. (1984). "Community-based prevention of hypertension in North Karelia, Finland." *Ann Clin Res* 16 Suppl 43: 18-27.

Vartiainen, E., K. Tossavainen, et al. (1991). "The North Karelia Youth Programs." *Ann N Y Acad Sci* 623: 332-49.