Community-based Health Promotion

III.11

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11.1 Introduction

This chapter describes theories and methods underlying successful *comprehensive community-based health promotion*, and provides four examples. These studies represent well the field of *experimental* epidemiology, involving defined populations and often done following insights derived from *observational* epidemiology. Three of these were designed to reduce risk factors for cardiovascular disease (CVD), and relied heavily on locally available channels of mass communication in addition to community organizing and other education methods, relatively low-cost approaches with the potential to reach and change lifestyle behaviors of entire populations, in contrast to traditional individual or group counseling. One example, studying alcohol-involved trauma, used only community organizing to promote adherence to existing laws, rather than public education for behavior change. By community organizing we mean the process of enlisting community leaders in support of project goals, and also in insuring their continued support. The Stanford Prevention Research Center (SPRC), beginning in 1972, pioneered development of the intervention methods of comprehensive community-based CVD prevention and other methods of health promotion and chronic disease prevention. SPRC was connected to all four examples, either as initiator (for two studies) or collaborator (for two studies). This review also describes the theoretical background, methods of intervention, the past history of such studies, the cultural basis for barriers to change and lessons learned for the future.

A community-based program is defined as one organized locally, and promoted through the community's institutions and communication channels. The traditional definition of a "community" is used in this review (a residential area with legally defined geographic boundaries, where a *local* governmental system regulates many aspects of schools, businesses, transportation, law enforcement, and recreational activities). A community is ordinarily last in a nation's regulatory chain, where education must ultimately occur, although for rural areas (in the United States) the county becomes the governing agent for education.

This chapter will address the following issues:

(1) The advantages are presented for community-wide interventions rather than for more limited locales, such as clinics, hospitals, work sites, or schools.
(2) The theories underlying successful community-based projects are described, including:
    a. community organizing theory, and its relationship to community self-development and diffusion of innovation theories, and
    b. the health communication-behavior change theory, and its relationship to social cognitive theory, social marketing, and to other determinants of successful use of mass media for health promotion.
(3) The methods needed for success are presented, including:
    a. message design through formative research;
    b. process analysis for comprehension of causes for change; and
    c. the role of community activism, advocacy, laws and regulations.

(4) The history of three recent decades of comprehensive community-based health promotion for cardiovascular disease prevention is described.
(5) The cultural basis for barriers to success is outlined.
(6) Lastly, a *Master Plan* for achieving success in this type of health promotion is presented.

Advantages of a Total Community Approach 11.2

Health promotion in schools, work sites, and clinics has a long history of individual success, but synergistic interactive effects can occur when they are imbedded in a *total community* campaign that adds inherently cost-effective mass media and environmental change (Schooler et al. 1997). Evidence for synergism was given by Rogers (1983), who found that diffusion of innovations within a community accelerates when adoption of the innovation reaches about 20% of the population – thus only comprehensive total community education programs have the capacity to achieve such effects. Lifestyles, such as tobacco use, dietary habits and exercise patterns, so strongly influenced by custom and by the media in developed countries, cannot be countered through simple means. Community-wide approaches fit the public health model because the usual medical model can neither prevent most chronic disease nor reach the entire population in need. By the "medical model" we mean the aspects of a nation's health care system, focused on the individual, that rely primarily on clinic outpatient and hospital services provided by physicians. The community provides influence through *locally produced* electronic and print mass media and through work sites, recreation sites, libraries, schools, medical, hospital and pharmacy settings, and social gatherings of many sorts. It offers opportunities for health-promoting regulations, such as providing opportunities for physical activity for all, school fitness classes, healthful school lunches, alcohol sales limits, and preventing tobacco product marketing to children.

Studies at the SPRC have shown that only *multiple and persistent* influences produce meaningful changes in the dietary, exercise, or tobacco-use behavior of adults, adolescents, and children. For adolescents, always resistant to health behavior change, the following influenced success: parents and teachers whose personal habits allow them to be supportive role models; amount and quality of school-based education on tobacco, fitness, and nutrition; peer influence; and amount, duration and quality of community-wide health education. Also, certain personal characteristics were influential – for example, the presence before the education's onset of *self-efficacy* toward one's behavior-change abilities (Fortmann et al. 1995).

11.3 Underlying Theories

Community-based health education carried out by SPRC and by some analogous projects have been guided by two major theories (community organizing and health communication-behavior change) , with success dependent upon a judicious blending of the two (Flora et al. 1989; Farquhar et al. 1991).

11.3.1 Community Organizing Theory

Community organizing theory describes methods of identifying the health problem (and resources needed or available), mobilizing the community's opinion leaders and organizations, gaining populace support, forming coalitions, launching and maintaining education programs, achieving regulatory changes, and *empowering communities* to reach and maintain their goals. Community organizing for health requires continued attention similar to the accepted role of political leaders – to assess periodically the needs of both governmental and nongovernmental organizations, and, in the case of health promotion, to aid in planning and coordinating health promotion campaigns. Community organizing as defined here has analogies to "community self-development" as described by Green and Kreuter (1991) and it also relies on elements of diffusion theory (Rogers 1983) – which has shown how innovations are adopted through natural social networks, aided by a community's opinion leaders. Rogers' account of "failure of water-boiling in a Peruvian village" provided an excellent example of the need to identify and work with a community's opinion leaders as a prerequisite for the success of a health innovation initiated solely by self-appointed "experts" who are not seen as trustworthy by the community's residents.

11.3.2 The Health Communication-Behavior Change Theory

The health communication-behavior change theory provides the basis for designing, sequencing and distributing messages for the total population and its subgroups based on their health needs, cultural attributes, social networks, media habits, attitudes, motivation, knowledge and self-management skills. It describes theories underlying educational *content*, such as social cognitive theory (Bandura 1986), which is primarily based on an individual's capacity for self-directed change. Bandura's research confirms that "learning by doing" is more effective than "learning from observing" (modeling a behavior), and both are more effective than an "information-only" approach that changes knowledge alone. These principles are contained in his *social cognitive theory*, which posits that guided practice in a new behavior can lead to increased self-efficacy and to greater behavior change (Bandura 1986). Thus, "knowledge-only" campaigns have been found less effective than those that apply Bandura's recommendations.

The health communication-behavior change theory also incorporates methods of reaching the total population using principles described as "social marketing"

(Kotler 1975; Lefebvre and Flora 1988). These marketing principles described first by Kotler as "product, price and promotion" lead to insuring the relevance of the "product" (health messages), and to the low material and psychological cost of attending to the health message. Additionally, successful social marketing occurs only when the health messages are promoted and distributed efficiently to a large proportion of the populace.

Another behavior change method included within the communication-behavior change theory is the method of teaching counter-arguing skills, as described by Roberts and Maccoby (1973). This method, also called "inoculation", can be presented either through the media or face-to-face, and teaches the learner how to best argue against a deleterious message, such as an advertisement promoting cigarette use. This "inoculation" method was found to be very effective in prevention of adolescent substance abuse when used in a manner that can be incorporated into comprehensive community-based health promotion (Robinson et al. 1987).

Lastly, Carwright's (1949) pioneering work on mass persuasion principles is also quite germaine to the health communication-behavior change theory. He described the need to change not only a person's knowledge and motivation, but that changes in "action structure" were also needed. These principles, when combined with Bandura's methods for self-management skills training and with certain elements of Rogers' diffusion theory, leads to a logical sequence of steps recommended for both the delivery and behavioral objectives, as derived from the health communication-behavior change theory (Table 11.1).

Table 11.1. The health communication-behavior change components (adapted from Farquhar et al. 1991)

Communication inputs	Communication functions (for the sender)	Behavior objectives (for the receiver)
Face-to-face messages	Determine receiver's needs	Become aware
Mediated messages	Gain attention (set the agenda)	Increase knowledge
Community events	Provide information	Increase motivation and interest
Environmental cues	Provide incentives	Take action, assess outcomes
	Provide training	Maintain action, practice self-management skills
	Provide cues to action, including environmental change	Become an opinion leader (exert peer group influence)

Methods 11.4

Initial Steps 11.4.1

Problem Identification. The initiating agency, group or person can emanate either from within or outside of the community. The first task is to identify the problem.

Local (community) interventions should ideally coexist with and interact with national programs and must be linked to scientific support from the national or international level, which has indicated that both CVD prevention (WHO 1986) and alcohol sales control (Holder and Wallack 1986) are problems requiring *local* action. Other than the initial steps of problem identification and formation of a coalition, most of the methods to be described are relevant only to the three CVD prevention examples described in this chapter. However, any chronic disease that requires widespread education designed to change "lifestyle" behaviors (such as exercise, diet and cigarette use) will require analogous methods.

Coalition Formation. Key political and opinion leaders as well as relevant organizations must form a coalition. This coalition must create a resource inventory, obtain populace support, and plan the intervention. Relevant organizations are listed below under Sect. 11.4.3 and include the following: the County Medical Society, municipal hospital community affairs departments, city parks and recreation departments and voluntary health agencies (i.e. the local branches of national heart, lung, cancer and diabetes organizations, as well as the Red Cross). Any organization that will act as a conduit (or "channel") for the distribution of mediated instruction or classes must also be represented (i.e. television and radio stations, local newspapers, schools, churches, libraries, pharmacies, clinics and physicians and dentists offices). As the coalition grows in size, a "steering committee" made up of about 6 members needs to be formed to carry out more detailed planning, including formation of expert groups in education and evaluation and "task forces" assigned to particular topics (Flora et al. 1989; Farquhar et al. 1991).

11.4.2 Planning

Formative Evaluation. As the term "formative" indicates, these activities form (create) the education effort and can be divided into categories of audience needs analysis, message design, pre-testing of education programs and evaluation of education programs. The needs analysis, message design and pre-testing phases are part of the social marketing aspect of health communication-behavior change theory. Also, the evaluation of education programs, although properly labeled as "formative" is also often termed "process" evaluation since it determines the contributions to success of different components of each education program (Farquhar et al. 1991). Process analysis is also done at the completion of the total program as part of "summative evaluation", although the distinction between formative and summative is sometimes quite arbitrary, depending on the intent of the evaluator (Farquhar et al. 1991).

11.4.3 Implementation

Need for a Comprehensive Approach. Interventions must go beyond attempting to change knowledge, the usual goal of an educational system, by providing

training in behavior-change *skills*. They must also go well beyond the individual, enlisting multiple community organizations in campaigns for change and seeking changes in the social environment and in regulations that promote access to the facilities and resources needed for healthful practices. Multiple communication channels (such as radio, television, newspapers, mass-distributed print products, schools and the internet) are needed to reach different subgroups, recognizing differing media usages, knowledge, and desire for change. A comprehensive intervention should involve schools, work sites, senior citizens' centers, voluntary health agencies (such as the local branches of any national organization that deals with cardiovascular disease, diabetes and cancer), churches, and facilities for sport, recreation, and health. These organizations and others can serve as education conduits, with the community's electronic and print mass media organizations assisting in message design, content and delivery. The Internet provides a new channel, whose community education role is now becoming better defined (Baker et al. 2003). Interactive computer learning, now becoming common in classrooms, can be designed for large groups – an emerging variant of mass media.

Comprehensiveness requires variety. For example, in tobacco control programs of SPRC's community campaigns, local medical clinics, dental offices, pharmacies, and libraries distributed a low-cost skills-training Quit Kit; a local smoking cessation class was shown on television; many newspaper articles and columns appeared; a local business supported costs of a smoking cessation contest; and all newspapers and electronic media "cross-advertised" activities designed for mass audiences (Altman et al. 1987). Formative evaluation must be continued throughout the entire implementation period of any planned intervention campaign. Success requires a well designed mix and sequence of programs delivered through varied channels. This integration, with goals set in advance and goal changes based on early results, is analogous to a commercial marketing campaign, hence the term "social marketing". The distinction from commercial marketing is that social marketing uses marketing methods for social betterment without a commercial or profit-making intent. As described above, social marketing is the explanatory term for the needs analysis, message design and pre-testing phases of formative evaluation. These phases require message tailoring to fit any subgroup's needs and preferences, respecting cultural differences, learning styles, and preferred learning sites. A message sequence should increase awareness, then, increase knowledge, and last, increase motivation and provide training in the skills needed for adoption and maintenance of a new behavior (Bandura 1986). Electronic media can carry out the first two parts of this sequence and stimulate use of the more information-dense print media of newspapers and booklets, which are inherently more effective in *skills training* than are electronic media (Flora et al. 1997).

Message Characteristics. Messages must be clear, focused, and salient. Salience requires broad reaching media, arousing interest and awareness – topics must break through passive indifference engendered by the information overload of many societies and become "on the public agenda". Given the large advertising budgets of today's mass media, health agencies' messages must be of sufficient production

quality to compete for the public's attention. The competition for the public's attention is great indeed since the average adult in the United States is exposed annually to 35,000 television advertisements, equaling 292 hours of exposure (Fortmann et al. 1995). Formative evaluation must continue during a campaign and alter message content in accordance to the state of readiness of the population. Thus, early in a campaign, messages should increase knowledge and awareness, followed by those that increase motivation and provide skills training – with resultant behavior change (Schooler et al. 1997).

11.4.4 The Amount of Intervention Needed

The amount of intervention (the "dose" of intervention) needed depends on many factors: lesser amounts are needed in smaller communities, at earlier stages in a country's adoption of a "health innovation", and when the advocated behavior change is reasonably simple (such as mammography, hypertension screening and immunization campaigns). Clearly, more complex changes are needed in individuals and in society's norms to alter eating or exercise patterns or to control tobacco use. Complexity in respect to nutrition arises from many sources, including longstanding cultural beliefs and practices; entrenched methods in agriculture, food production, and retailing; advertising of "unhealthful" foods; and the advent of widespread fast-food chains that are dominated by commercial interests unresponsive to local demands and needs. Few projects have measured intervention dose, except in very general terms that do not allow accurate estimates of the amount of exposure. One excellent method records the total number and duration of messages distributed over a defined time period, albeit with a defect due to lack of message quality measures (Farquhar et al. 1990). This method's use increased evaluation costs (which comprised almost two-thirds of total expenses) in the Stanford Five-City Project (FCP – see below). This expense may explain why others have not used it nearly to the same degree of completeness. However, it is clear that public health education would be served if more campaigns were analyzed this thoroughly. The following describes this method's use in the Stanford Five-City Project (see Sect. 11.5.3). The number of adults aged 18–74 were known in the communities receiving the education programs, and they were used for the analysis. The number and duration of messages from TV/radio, newspaper, other print messages and face-to-face messages (largely classes) were enumerated each year for five years. The number of messages from newspaper, other print and face-to-face encounters were obtained from the education group's records. The TV broadcast hours were obtained from the Neilsen (A.C. Neilsen Co, Chicago IL) monitoring system, which records the proportion of households viewing a particular TV station for all hours for each major community area in the United States. Radio hours were obtained from the local radio station survey data. Calculations are then made for the number of messages for each education channel and their duration for the average adult in the community (Flora et al. 1989; Farquhar et al. 1990).

Evaluation 11.4.5

Comprehensive community-based campaigns aiming for widespread behavior change in the community's population need the following types of evaluation: (1) Formative evaluation to plan and test messages (as described in Sect. 11.4.2); (2) Summative evaluation to determine the effects of the campaign at different levels (the individual, in organizations, and in community's social or physical environment); and (3) Process evaluation to study the effects of each individual educational activity. Formative evaluation determines the likelihood that a message, class or group activity will reach the intended audience. Process evaluation examines the success or failure of a program component, and also allows insight into why it succeeded (or failed). As mentioned in Sect. 11.4.2, process analysis may be classified under either "formative" or "summative", depending on timing and purpose. (Flora et al. 1989; Farquhar et al. 1991). Summative evaluation methods are generally more rigorous than formative evaluation methods, and, in the case of chronic disease prevention interventions, often will entail measures of physiological states (such as blood pressure), as well as attitudes, knowledge or behavior (such as cigarette use) (Farquhar et al. 1977, 1990). The unit of analysis is commonly the individual, although both the Stanford Three Community Study (Williams et al. 1981) and the Five-City Project (Farquhar et al. 1990) also analyzed risk factor change by the more conservative method, with the community as the unit of analysis.

Additional Methods Needed 11.4.6

Successful community-based health promotion requires effective leaders, community activists with the courage and charisma to advocate health innovations. Advocacy campaigns derived from international, national, state, or provincial sources can provide a local activist leader with the popular support to fight entrenched bureaucrats who defend the status quo. Tobacco control in Australia and the United States provide examples. National and state advocacy groups with access to mass media created a strong mass movement for change, allowing advocates to enlist popular support for local tobacco control measures. In both California and Australia's State of Victoria this popular support led to statewide increases in tobacco taxes, with some retained for education against tobacco, a measure that had been resisted by state legislators who had long been influenced by tobacco lobbyists – an example of community activism moving up the "ladder" of bureaucracy to a higher political level (Victorian Health Promotion Foundation 1994; Pierce et al. 1994; Catalonia Declaration 1996).

Changes in policies, laws and regulations (PLR) are needed for success, especially for long-term success. Local PLR can affect alcohol and tobacco sales, and create environments that improve nutrition and enhance physical activity. However, national, state, or provincial actions can magnify local PLR and education efforts on topics such as tobacco taxation, automobile seat-belt laws, food and drug safety, school nutrition, school physical activity policies, and (in the United

States) laws on firearms. As described above, widespread popular attitude changes in numerous communities can also affect the political process at the state, province or federal level.

11.5 History of Comprehensive Community Health Promotion

The history of the past three decades described in this chapter is restricted largely to 13 formal research projects designed to affect cardiovascular disease (CVD) risk factors. They involved entire populations of at least one *education* community, compared to at least one *control* community. Three of the four examples to follow are drawn from these 13 projects. Dissemination worldwide into practical applications of community organizing and mass communication technologies, derived in part from these research projects, occurred throughout these three decades.

11.5.1 The First Two Examples: the First Decade

The first and second example, the Stanford Three-Community Study (TCS), in three small agricultural marketing towns in California (total population 45,000), and the North Karelia Study (NKS), in two adjoining predominately rural Finnish counties (North Karelia population about 180,000), each began in 1972.

TCS, the first Stanford project, was carried out from 1972–1975 in both English and Spanish, comparing effects of mass media alone in one community and mass media plus 10-session risk reduction classes for some high-risk adults in a second, with a third as a control (Farquhar et al. 1977; Schooler et al. 1997). Groups exposed to varied education amounts showed a dose-response change in smoking, blood pressure, and blood cholesterol, with a proportionately larger effect in the Spanish-speaking residents than in the Anglo majority. This minority population outcome required intervention resources in Spanish to be proportionately larger than those provided in English to the Anglo majority. A composite CVD risk reduction of about 23% and 30% occurred in the mass media/only and mass media/plus classroom conditions, respectively. The risk score (a probability) was derived from each adult's "before-after" risk levels (age, gender, systolic blood pressure, blood total cholesterol level, cigarette use and relative weight). These risk parameters were entered into a multiple logistic regression model to predict the 12-year future probability of a coronary heart disease event (myocardial infarction, sudden death or angina pectoris). The scoring system was based on coronary events experienced by adults in the long-term prospective Framingham Heart Study (Truett et al. 1967). Thus, a relatively modest amount of mass media (about 30 television and radio "spots", weekly newspaper columns on heart health, and four separate mass mailings of booklets) was sufficient to change the population's body weight, cholesterol and blood pressure levels, and smoking prevalence.

The education followed the principles outlined in Sect. 11.3 for the community organizing and health communication-behavior change theories. As an example of community organizing, close cooperative relationships were created with two influential opinion leaders (a local Anglo physician, and the Hispanic program director of the local Spanish language radio station). As an example of the social marketing aspect of the health communication-behavior change theory, message design for the smoking cessation print materials were different in the English and Spanish languages, as dictated by formative evaluation. Both the eight session classes held for a high-risk subset of the population and the print products mailed to households incorporated some of Bandura's self-management principles, such as building awareness, making a clear commitment (i.e. a written "contract") and adopting gradual, stepwise changes in behavior designed to increase confidence in one's ability to achieve the desired behavior change.

NKS evaluated two matched, rural Finnish counties that contained many villages with farming and lumbering as the main occupations. North Karelia (about 180,000 population) received an education campaign that began in 1972, continuing to the present. After ten years, CVD risk factor changes comparable to the TCS occurred, and significant net reductions in CVD events occurred (Puska et al. 1985; Schooler et al. 1997). This study was marked by extensive community organizing, resulting in strong partnerships with residents and their organizations. The NKS influence on its country's policies was unparalleled among the CVD projects, providing its most important lesson – that a well done project led by respected scientists can move an entire country. As examples, Finland's food and agricultural industries made large changes: Fertilizers were supplemented with selenium (a substance low in Finland's soil that is needed for health), milk pricing was changed (based on protein instead of fat content), programs were created to replace dairy farms with berry farms, a new canola industry replaced jobs lost in dairying, and increased production of low-saturated fat foods occurred (Puska et al. 1985; Puska 1995; Catalonia Declaration 1996).

In 1972 population-wide nutrition change and smoking cessation interventions were an innovation internationally, which may partly explain the success of these two pioneering programs (TCS and NKS).

Early International Diffusion, 1977–1983 11.5.2

Studies similar to the TCS were done in Italy (The Martignacco Project, 1977–1983, one treatment, mass media and screening, one control – CHD risk fell in men only); Australia (The North Coast Project, 1978–1980, similar to TCS, one mass media, one mass media plus classes – effects on smoking, greater in the mass media "plus" community); Switzerland (two treatment, two control pairs, German and French speaking, mass media, classes, environment changes – effects on smoking, blood pressure and obesity); and South Africa (similar to TCS, one mass media, one mass media plus classes plus community events – decreased CHD risk, blood pressure, smoking; both treatments were equivalent). All four studies, reviewed in Schooler et al. (1997), reported significant risk factor changes, adding evidence for

the effectiveness of the TCS model, namely that a predominately community-wide mass media campaign is effective, but that supplemental face-to-face instruction usually adds some extra effects (Farquhar et al. 1991). It is noteworthy that all of these studies were done in rather small communities (population sizes of about 12,000 to 15,000 residents), thus these effects may be more difficult to achieve in larger and more complex communities.

11.5.3 The Second and Third Decades: Projects Begun in the 1980s and 1990s

The third example is the Stanford Five-City Project (FCP) (USA). Its intervention phase from 1980–1986 extended TCS methods to larger populations (total population of about 360,000) with multifactor CVD prevention directed at two northern California cities. There were three control cities (Farquhar et al. 1990). It differed from TCS in the larger size of the communities, in greater use of community organizing and in greater collaboration with the communities' health, media, and education organizations in planning and implementing programs. It was similar in generous use of mass media, both print and electronic. The *number* of messages received by the average adult over 5 years of education was as follows: television and radio 67%, newspaper 28%, other print (such as booklets and "tip" sheets) 4% and face-to-face 1%. Duration of exposure over 5 years was as follows: television and radio 35%, newspaper 18%, other print 41% and face-to-face 5%. It was unique in measuring total dose of education (about 5 hours/year and about 100 episodes of exposure/year to all forms of media and classroom education) (Flora et al. 1989; Farquhar et al. 1990). This means that an "average adult" who has followed the whole program on mass media and in classrooms would have experienced 100 single episodes (including TV, radio, newspaper or other print, workshop training, or community sponsored exercise sessions) which add up to 5 hours duration in total in each year.

FCP's initial year of television messages (defined as "high reach/low involvement") stimulated the public's use of print media, which supplied more effective training than from television in the skills needed for smoking cessation, healthful food purchasing or preparation, learning appropriate exercise habits or ways to lose or control body weight (Flora et al. 1997). However, television can be quite effective in skills training. For example, the FCP presented an 8 week "live" TV broadcast of a local smoking cessation class, which contained considerable modeling of the smoking cessation skills being learned by the class attendees (such as behavioral problem solving, self monitoring, tapering, goal setting, deep muscle relaxation and group social support) (Altman et al. 1987). Results were comparable to the TCS (about a 15% fall in Framingham composite risk of CVD) (Truett et al. 1967), with a major impact on blood pressure (4–5%) and smoking (13%) (Farquhar et al. 1990). Health bureaucracies, usually timid, should gain courage from the FCP's "David and Goliath" demonstration that only 3 hours/year of high quality television health education can counteract the public's exposure to about

100 hours/year of television advertising devoted to unhealthy nutrition. The exposure of the US population is estimated as 292 hours of TV advertisement based on the Neilsen monitoring system (cf. Sect. 11.4.4). Michael Jacobson of the Center for Science in the Public Interest estimated that about one third of these are for "unhealthy" nutrition (personal communication). Almost all TV nutrition advertising is "unhealthy" since the food industry is so inclined. For example, after the nutritionists and preventive medicine scientists succeeded, through education, in decreasing egg and butter intake, the counterattack began to bring the US population back to their previous unhealthy consumption. Although all preceding CVD studies showed effects in small towns and/or rural districts, FCP showed benefit in *cities* (with populations as high as 100,000). Also, these effects occurred despite the advent (at least in the state of California) in the 1980s of dual working families and increasing public use of fast food, factors that made achieving nutrition-behavior change more difficult.

FCP's modest resources and greater effects, as compared to similar projects, support the benefits of the mass media presentation components of the health communication-behavior change theory, including its adaptation of the skills training aspects of Bandura's social cognitive theory. Perhaps the most practical lesson to policymakers is that adult residents saved 30 times more money from their decreased cigarette purchases ($120/adult/year) than the cost of the campaign ($4/adult/year) – savings retained by the individuals of the community, not counting savings in long-term health costs and short-term decrease in absenteeism from the individual's employment. Lastly, the communities expanded the health promotion activities of the county's Department of Health and adopted FCP's technologies, later applying them to seat-belt promotion and violence and adolescent pregnancy prevention.

Other successful CVD projects, both large and small, occurred in these decades in the United States, Sweden, Denmark, Canada, Germany, the Czech Republic, and China. Also, World Health Organization-sponsored projects began in about 23 other countries (Schooler et al. 1997) and have expanded beyond that since 1997. In all instances, they borrowed heavily from the experiences of the three exemplars and in many instances received training from either the Stanford or the North Karelia groups. In some of these projects, changes seen were less than was the case in the Stanford and North Karelia projects. Although it is difficult to know the reasons for a relative lack of success (for example, the magnitude of the interventions was incompletely described), in some instances the cause appeared to be related to inadequate use of mass media.

Community Projects in Other Health Topics 11.5.4

Interventions on alcohol, mammography, tobacco control, immunization, motor vehicle injuries and HIV/AIDS are prominent examples of other community-based projects done in developed countries, but with fewer well-controlled studies than in CVD. Also, many community studies have been done in developing countries, where effective recruiting methods and effective mass media use (often using

radio messages) have been reported, but a review of these is beyond the scope of this chapter. One well-controlled U.S. study, Preventing Alcohol Trauma (PAT)[1], is the fourth example. This five-year study of three U.S. communities showed a 10% decrease in alcohol-related traffic injuries and a 50% decrease in adolescent alcohol use (Holder et al. 1997). The traffic injuries were analyzed for three years prior to the study, and were compared to police and hospital records for the five year study duration. The alcohol use data were compiled from various records, prior to and during the study. These records included: (1) arrest records of adolescents under the age of 18 for drinking while driving, and, (2) sales records from retail liquor stores and bars or taverns, using under-age adolescents as attempted purchasers (to test the system). Coalition building and organizational behavior change among the police, alcohol sales outlets, and alcohol servers (such as bar tenders and restaurant personnel) were the main interventions. The public responded to a fear, instilled through publicity, of the penalties of greater enforcement of existing laws on underage alcohol purchases or drinking and driving. Therefore, in contrast to the three CVD exemplars, PAT showed that *major* public education is not needed for large public behavior changes. PAT estimated a cost saving of $2.88 for every dollar invested, a number close to that found in many work-site health promotion studies, where the "return on investment" was $3 to $6 for each dollar invested, measured in two to five years of the program (Aldana 2001). The cost savings came from decreased medical costs secondary to the reduced rate of alcohol-related automobile injuries. PAT found their communities had the required infrastructure for the campaigns, requiring only training provided by one indigenous community coordinator, a part-time clerk, an imaginative plan, and the will to proceed.

TCS, the first, and PAT, the fourth example, are opposites: TCS had a maximum of mass media education and a minimum of organizing, whereas PAT had the opposite. Thus, either model works, but to change complex behaviors, community educators must use sophisticated behavior-change methods, such as those of the health communication-behavior change theory described above. If fear of arrest for breaking existing laws on alcohol use suffices to change personal drinking-and driving-habits, then the education process is simpler.

11.6 Past Experience Leads to a "Master Plan"

A five-step approach emerges from these studies:

(a) Define the problem. Does the community need a health promotion campaign? A decision can be made from national or local survey data.

(b) Organize the community, creating a campaign that includes education, continued organizing, training of community organizations, empowerment of the public and the community's organizations, and future maintenance of programs developed during an initial phase of about two years.

[1] The Stanford Prevention Research Center collaborated with the investigators of this study.

(c) Implement an intervention, delivering 3–5 hours of education exposure per year for two years, using in year one, about 70% television/radio to arouse interest and provide knowledge, about 15% from more specific and instructive print media (emphasizing newspapers, if available) and 15% from community events and programs (such as health fairs, contests, and classes). In the second year, decrease TV/radio to about 40% and increase print to 30% and community events and programs to 30%.
(d) Evaluate the intervention, using the process and summative methods described above. Insure that adequate tracking of exposure to the intervention (the independent variable) is done, with calculations of both the amount and type of intervention.
(e) Institutionalize programs. The community becomes a demonstration project, with its "empowered" organizations functioning as health promotion resource centers for a wider region.
(f) Use the new community resources and its residents' potential power to advocate for local, regional, and national governmental regulations and laws that will increase local intervention effects and extend them beyond the community.

Any individual or organization that wishes to engage in community-based health education should gain courage from the words of the now deceased anthropologist, Margaret Mead, as quoted in the closing passage of the Catalonia Declaration (1996, p 75), "Never doubt the capacity of a few dedicated individuals to change the world, in fact, it is the only way it ever has."

The Cultural Basis for Barriers to Success 11.7

A *healthy city* has been defined by the absence of crime, crowding, and poverty and by the presence of educated residents and enlightened (and trained) organizations. Together these lead to a community empowered to solve its social problems (i.e., to increase its social capital) (Travers 1997).

Considering barriers, MacIntyre (2000) found Glasgow's environmental factors to be major barriers to healthful exercise behavior. Certain macroeconomic factors inherent in *globalization*, such as capital flight and increased wealth and income gaps, have been described as barriers to planned change (Cahill 1983; Bezruchka 2000). All such barriers threaten *community stability*, inhibiting greatly the success of health promotion attempts. However, wise compensatory resource allocation can overcome many barriers, as was shown in the Hispanic minority of the TCS. Therefore, the challenge for the future is: Responsibility for success in community-based health interventions lies with the interventionist, not with the community's residents! Secondly, it is clear that successful community-based health promotion requires attention to the cultural, environmental and social determinants of health that underlie the modern epidemics of chronic disease. Colditz (2001) reminds us of Rudolph LK Virchow's words, to paraphrase, that: "The history of epidemics is

therefore the history of disturbances of human culture." Certainly the increasing worldwide prevalence of obesity, the spread of tobacco use and the urban barriers to physical activity fit Virchow's definition of "disturbances of human culture". As Colditz points out, many scientific endeavors put false hope in the search for new risk factors, rather than in applying the now well-established means and economic benefits of reducing the culturally determined risk factors for chronic disease. For example, Aldana (2001) cites evidence for cost savings of from 3 to 6 times the cost of health promotion for life-style change in large worksites. Despite this and other extensive evidence for the benefits of primary prevention (The Victoria Declaration 1992; The Catalonia Declaration 1996), many countries, including the U.S., spend less than 5% of total health care expenditures on prevention activities of all kinds (including immunizations, mammography and health promotion) (Medical News and Perspective 1994; World Health Report 1997). Although the reasons for the *unreasonable* diversion of a nation's resources from disease prevention to disease treatment are many, it certainly includes pressure exerted by the pharmaceutical and medical device industries. Also, the tobacco industry is still a prosperous growth industry worldwide, especially in middle and low income countries (The Osaka Declaration 2001). Therefore, from a political economy perspective, success in chronic disease prevention requires vigorous governmental policy changes (i.e., on taxation, advertising, promotion of tobacco use to minors, etc.), not only more economic resources (The Osaka Declaration 2001).

11.8 Conclusions

Three decades of the "total community" health promotion approach in developed countries strongly support the feasibility, at relatively low cost, of achieving transfer of public education technologies to a community's infrastructure (public health, media, schools, etc.), resulting in significant changes in health habits of populations. Although most studies derive from small communities, recent successes in Tianjin (China), a city of 400,000 (two exemplars examined populations of $> 100{,}000$), suggest that the model also works in large populations (Schooler et al. 1997). Organizing and educating communities requires *advocacy, activism, coalition building*, and *leadership*; success is enhanced by *regulatory change*. Theory matters: When the population gains self-efficacy through education, the result – *community efficacy* – enhances capacity to change institutional policy and practice, thus maintaining community change.

Science cannot serve society if its evidence for educational benefit is ignored. This is not a new concept. As written over 2000 years ago in the Chinese *Book of Lessons*, "If a virtuous and learned scholar aims to influence the people as a whole, one must first educate the people".

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