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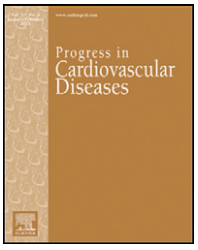

Community-Based Healthy Living Interventions

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ABSTRACT

In an environment in which most people have lifestyles that increase risk for initial or recurrent cardiovascular disease (CVD) events, community-based healthy lifestyle initiatives are highly effective in providing programs, education and support to reduce associated CVD risk factors and improve outcomes. Pioneering programs, such as the Stanford Three Community and Five Cities studies, and the North Karelia project in Finland, served as prototypes for current initiatives. These include partnerships with national organizations (e.g., YMCA DPP) and faith-based programs. Training may be provided by healthcare professionals and/or community healthcare workers; initiatives include exercise-based and weight-reduction programs, smoking cessation interventions, dietary counseling and education, and medication adherence. Contemporary technologies and home-based programs provide alternatives to those who might not otherwise have access to center-based programs. Community-based initiatives, particularly those with state or national support, have the potential to enhance the delivery and effectiveness of CVD prevention at low cost.
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Abbreviations and Acronyms

YMCA = Young Men's Christian Association

DPP = Diabetes Prevention Program

ACEI = Angiotensin Converting Enzyme Inhibitor

ARB = Angiotensin Receptor Blocker

BP = Blood Pressure

CB HLIs = Community-based healthy lifestyle interventions

CHD = Coronary Heart Disease

CV = Cardiovascular

CVD = Cardiovascular Disease

CR = Cardiac Rehabilitation

CHD = Coronary Heart Disease

CDC = Centers for Disease Control

DEPLOY = Diabetes Education & Prevention with a Lifestyle Intervention Offered at the YMCA

CHWs = Community Health Workers

COACH = Community Outreach and Cardiovascular Health

FBO = Faith-based organizations

HTN = Hypertension

ICR = Intensive Cardiac Rehabilitation

PA = Physical Activity

SCORE = Systematic Cardiovascular Risk Estimation

T2D = Type 2 Diabetes

This review summarizes the important role of community-based healthy lifestyle interventions (CB HLIs) in the primary and secondary prevention of cardiovascular (CV) disease (CVD) and related efforts to recruit and enhance community involvement in these risk-reduction programs. We provide an overview of CB HLIs from research initiatives in the 1970s to ongoing trials and noteworthy clinical investigations of the 21st century. We also discuss the impact of European models, highlighting the pioneering studies of Drs. Puska, Fortmann, and Farquhar. In addition, we review the methodology, effectiveness, and efficacy of traditional and non-traditional cardiac rehabilitation (CR) programs, with specific reference to community and home-based interventions.

Rationale for CB HLIs

Following World War II, increasing evidence began to accumulate regarding the link between lifestyle risk factors and the prevalence of atherosclerotic CVD and stroke. Epidemiologic research supported the hypothesis that certain risk factors were likely to be causal, but randomized controlled trials were needed to further substantiate this relation.[1] Established or conventional lifestyle risk factors include cigarette smoking, low physical activity (PA), overweight and obesity, dyslipidemia, high blood pressure (BP), elevated blood glucose (including type 2 diabetes/T2D), and poor dietary habits, such as excess sodium, saturated fat, trans fat, calories, and sugar intake, as well as inadequate consumption of fruits, vegetables, and whole grains. High levels of stress and other psychosocial modulators (e.g., depression, anxiety, social isolation) have also been implicated, either directly or indirectly, in the development of CVD.[2] Interestingly, between 2003 and 2013, although CVD mortality decreased ~38%, the burden of some coronary heart disease (CHD) risk factors (e.g., obesity, T2D, physical inactivity) remained high.[3]

The American Heart Association 2016 Heart Disease, Stroke, and Research Statistics reported that CVD remains the leading global cause of death, accounting for >17.3 million deaths per year, and this is expected to increase to almost 24 million by 2030. In 2013, CVD deaths accounted for 31% of all global deaths, with the highest burden found in low- to middle-income countries. The worldwide prevalence of stroke approximated 33 million, making it the second leading cause of death, immediately following CHD. Thus, the direct and indirect cost for healthcare expenditures and lost productivity resulting from CVD was estimated at $317 billion.[3]

The Centers for Disease Control (CDC), in a recent review, noted that in 2010 chronic diseases were responsible for 7 of the top 10 causes of death, and that CVD and cancer together accounted for 48% of all deaths.[4] The report listed obesity and T2D among the leading causes of disability and excess healthcare costs. Moreover, in 2011, more than half of all American adults were not exercising regularly, and 76% did not meet minimum recommendations for PA. In addition, 1 in every 5 adults (>42 million) reported smoking cigarettes every day. More than 3200 Americans under 18 years of age smoked their first cigarette in 2012, and many of these are expected to become regular smokers. In 2010, the CDC estimated that the total costs for CVD and diagnosed T2D were $315.4 billion and $245 billion, respectively. These estimates include both direct medical costs and decreased productivity.[4]

These enormous costs to society, individuals, and communities substantiate the need for CB HLIs and expanded research initiatives. The challenge is to effectively support healthy lifestyle interventions at the national, state, and community level. With medical advances and increased access to both primary and specialty care in the United States, communities hold great promise in supporting efforts to reduce CVD risk factors by implementing healthy lifestyle intervention programs.[4,5]

Community-based healthy lifestyle research – early lessons learned

n 1981, Fortmann et al. reported the results of a CV health education program in 2 communities in Northern California.[6] The goal was to determine whether a health education program could favorably modify conventional CVD risk factors. The Stanford Three Community Study used a comprehensive, multifactorial approach to risk factor reduction. The intervention and control cities were in a semi-rural, primarily agricultural area of northern California. A random sampling of men and women between 35 and 59 years of age were invited to participate in the baseline survey during the fall of 1972. The 2-year health education intervention was followed by a maintenance year, during which risk reduction efforts were continued. Subsequent annual surveys were repeated through 1975.[6]

The intervention was based on mass media health education. Although the targeted communities were separated from the

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