

Focus on: Promotion of Cardiovascular Health (II)

Promotion of Cardiovascular Health at Three Stages of Life: Never Too Soon, Never Too Late



José M. Castellano,^{a,b} José L. Peñalvo,^b Sameer Bansilal,^a and Valentín Fuster^{a,b,*}

^a Cardiovascular Institute, The Mount Sinai Medical Center, New York, United States

^b Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain

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ABSTRACT

Cardiovascular disease is the leading cause of death worldwide, with an especially devastating impact in low-to-medium income countries. Cardiovascular disease has been elevated to this position by a combination of factors that include urbanization and its attendant effects, such as obesity, a sedentary lifestyle, changes in dietary habits, and smoking. Given the enormous extent of the problem and the complexity of its causes, which include cultural, social, political, and health care factors, an equally sophisticated and comprehensive strategy is required to combat cardiovascular disease on a global scale. Because exposure to cardiovascular risk factors occurs from early ages, this strategy must be expanded and adjusted throughout the life of an individual. Thus, our efforts should be concentrated not only on cardiovascular disease treatment and prevention, but also on health promotion and primordial prevention. In this review, we present different strategies yielding encouraging results at the population level, from childhood until old age, that aim to protect against the challenges facing the scientific community when combating cardiovascular disease.

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Promoción de la salud cardiovascular en tres etapas de la vida: nunca es demasiado pronto, nunca demasiado tarde

RESUMEN

La enfermedad cardiovascular es la primera causa de muerte en el mundo, y su impacto está siendo especialmente devastador en países de rentas medias-bajas. La combinación de factores como la urbanización y sus efectos derivados, como la obesidad, el sedentarismo, los cambios en hábitos dietéticos y el tabaquismo, se han combinado para situar la enfermedad cardiovascular en esa posición. Dado el enorme alcance de este problema y la complejidad de sus causas, que incluyen factores culturales, sociales, políticos y sanitarios, la estrategia para combatir la enfermedad cardiovascular a escala global debe ser igualmente sofisticada e integral. Como la exposición a los factores de riesgo cardiovascular se da desde edades tempranas, se debe expandir y ajustar esta estrategia a lo largo de la vida del individuo. Por ello, es necesario centrar los esfuerzos no solo en el tratamiento de la enfermedad y la prevención cardiovascular, sino también en la promoción de la salud y la prevención primordial. En esta revisión se presentan diferentes estrategias que han proporcionado resultados esperanzadores a escala poblacional, desde la infancia hasta la vejez, para defenderse de los retos a los que la comunidad científica se enfrenta para luchar contra la enfermedad cardiovascular.

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Palabras clave:

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Enfermedad neurodegenerativa

INTRODUCTION

Coronary disease is largely a consequence of lifestyles that are not particularly heart-healthy. Hypertension, obesity, a sedentary lifestyle, smoking, hypercholesterolemia, and diabetes mellitus maintain a direct relationship with the lifestyle of each individual. Recent data show that these life habits are acquired early on in life, specifically at around 3 years to 8 years, and, moreover, that they persist from childhood to adulthood. Thus, promotion of cardiovascular health in childhood represents a great opportunity for primary prevention, particularly in developing countries, which

* Corresponding author: Cardiovascular Institute, The Mount Sinai Medical Center, One Gustave Levy Place, Box 1030, New York, NY 10029-6574, United States.
E-mail address: valentin.fuster@m Mountsinai.org (V. Fuster).

Abbreviations

AD: Alzheimer
 CVD: cardiovascular disease
 CVRF: cardiovascular risk factors
 NDD: neurodegenerative disease

are undergoing considerable changes in health-related behaviors. The structure for implementing these strategies should include school and community programs that promote physical activity and a heart-healthy diet to combat the burden of chronic diseases associated with a sedentary life and obesity.

Cardiovascular health promotion strategies should continue in the transition to adulthood and adjust to the idiosyncrasies of this stage, with the society in which we live exerting a clear deleterious influence on our health. Excessive consumerism and its influence on our habits and behavior, the economic interests of the food industry, the scarce ability of regulatory bodies to influence these characteristics, the growing social and cultural inequalities, and the generally poor communication between the sectors involved in the regulation and monitoring of our health are some of the factors that lead us to live a largely unhealthy life and develop a series of chronic diseases. Faced with this complex structure, and in response to the need to implement strategies that influence the behavior of adult populations, a new approach has been initiated to improve population-wide cardiovascular risk profiles by using community help and communication programs that involve adults helping each other, with a methodology similar to that of other organizations (such as Alcoholics Anonymous).

Health promotion must include the oldest population of our society. Atherosclerosis is a ubiquitous process that affects almost all of the human body, and there is increasing evidence of the pathological link between coronary disease and neurodegenerative disease (NDD). The NDD has become a major health problem, together with population aging and the global burden of cardiovascular disease (CVD). Recent research has provided solid evidence on the association between the risk of Alzheimer disease (AD) and dyslipidemia, a sedentary lifestyle, hypertension, obesity, diabetes mellitus, and smoking. This association indirectly identifies atherosclerosis and coronary disease as significant etiological factors for degenerative cerebral disease. Accordingly, studies must determine if intervention programs aimed at multiple risk factors and that encompass different life stages of individuals effectively delay the onset and progression of symptomatic dementia.

Therefore, we believe that if we want to affect population health, we must implement strategies that facilitate the acquisition and maintenance of heart-healthy habits that are adapted to the specific needs of the different life stages, from childhood to old age. Only via coordinated strategies for health promotion and cardiovascular prevention throughout an individual's life will we succeed in counteracting the increase in CVD.

CARDIOVASCULAR HEALTH PROMOTION IN CHILDHOOD: THE SII (SALUD INTEGRAL) PROGRAM

The preclinical substrate of atherosclerotic disease (lipid material) begins at early ages and its development largely depends on nonheart-healthy behavior that determines exposure to risk factors. Low exposure of adults to risk factors is associated with a decrease in cardiovascular death, increase in survival, and improved quality of life.¹

Population studies have revealed the importance of health promotion, primordial prevention (defined as preventing the adoption of risk factors), and primary prevention (which combines interventions aimed at modifying risk factors to prevent an initial cardiovascular event).² Particularly worrying are trends that show not only increased levels of obesity and diabetes mellitus, but that these diseases develop at younger and younger ages.³ These trends underline the need to adopt health promotion strategies that include primordial and primary prevention programs that are implemented throughout an individual's life.

During recent decades, the main cardiovascular risk factor in both adults and children has been identified as obesity and associated factors, such as diabetes mellitus and hypertension, a consequence of inadequate nutrition and limited physical activity. Recently, results have been published on the incidence and prevalence of childhood obesity in the United States, with 12.4% and 14.9% of preschool-aged children obese and overweight, respectively.⁴ Spanish children currently have largely unhealthy habits such as poor nutrition and inadequate physical activity, which are causing a high prevalence of childhood obesity. In Spain, the prevalence of overweight and obesity in the population aged 2 years to 24 years was 26% in 2000. The prevalence of obesity (14%) was higher in males (16%) than in females (12%).⁵ Boys and girls from 6 years to 13 years showed higher rates of obesity. Obesity is more prevalent at lower socioeconomic and education levels. In Europe, the highest prevalence of obesity was seen in southern countries, with 36% and 31% of children either overweight or obese in Italy and Greece, respectively.⁶ The risk factors of CVD, typically studied in adult populations, can already be seen in the Spanish childhood population. Addiction to alcohol, tobacco, and other drugs are also important risk factors for CVD, and Spanish children have high levels of addiction to substances such as tobacco and alcohol.⁷ In 2008, an epidemiological study performed in 14-year to 18-year-old students revealed that 81.2% and 44.6% had previously consumed alcoholic drinks or tobacco, respectively.⁸

Data obtained via noninvasive imaging studies have shown that exposure to cardiovascular risk factors (CVRFs) during childhood and adolescence is associated with a significant increase in subclinical atherosclerosis during adulthood.⁹ For example, the Young Finns study found that exposure of adolescents aged 12 years to 18 years to risk factors predicted a significant increase in carotid intima-media thickness in adulthood.¹⁰ These population studies have provided additional evidence on the need to begin primordial prevention and cardiovascular health promotion at early ages. These studies have shown high prevalence of the main CVRFs in childhood^{11–13} and, moreover, that these risk factors are potentially modifiable.^{14,15} These data have led to the development of clinical guidelines on primordial and primary prevention in children and adolescents.^{16,17}

Thus, we believe that there is an urgent need to implement high-quality health education programs for children (both for families and in the school environment), to help them to adopt heart-healthy lifestyles that are maintained in their transition to adolescence and adulthood. Thus, a total health program called SII (*salud integral* [comprehensive health]) has been designed to promote cardiovascular health in children from 3 years to 5 years, strengthening healthy behavior to modify CVRFs. Using the school environment and drawing on the teaching experience of *Sesame Street* and its tradition of high-impact educational programs, this program is introducing a conceptual change in disease prevention by moving toward health promotion. In the implementation of this type of intervention, the school environment plays a fundamental role, given that it provides an appropriate environment for evaluating the effectiveness of an intervention in controlled conditions. Moreover, the most effective interventions introduced in schools are those that involve families and have as an objective

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