

What Can We Do to Modify Coronary Risk Factors?

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Prevalence of Coronary Risk Factors

Cardiovascular disease is the leading cause of death in the adult population of developed and developing countries. In both Spain and in Chile, the figures relating to mortality have remained unchanged over the recent years, though they still remain the leading cause of death.^{1,2} Coronary disease accounts for 8% of all deaths in the Chilean population and for 11% in the Spanish population.^{1,2} Moreover, the so-called coronary risk factors are known to be present in a similar proportion in cerebrovascular disease, which constitutes the other major cause of death in adults, according to the results of the international registry of atherothrombosis REACH.³ Additionally, the development of atherosclerosis has been shown to start at an early age in life, even though the clinical manifestations are not seen until later.

These facts have led to a permanent interest in determining the prevalence of coronary risk factors from various epidemiological studies and in different populations,^{4,6} since their possible modification might lower the related death and disease. A study carried out in the VII Region of Chile among university students from differing social and economic backgrounds showed that the prevalence of these risk factors is already high early on in life.⁷ This study used very strict classification criteria for the risk factors, in accordance with the recommendations of the International Society of Hypertension and the latest report from the United States National Cholesterol Education Program (NCEP). As well as the traditional risk factors, the authors also included a survey on sedentary lifestyle and an evaluation of overweight and obesity. They found a prevalence of smoking of 39.8%, a figure very similar to the 43.6% reported by Baena et al⁴ in a young population in a cross-sectional study of primary care patients in Barcelona.⁴ However, the prevalence of hypertension in the Chilean students was 18%, in contrast to the 2.6%

in the Spanish population; both studies used very similar classification criteria. The Chilean study found a prevalence of hypercholesterolemia of 20.2% and of hypertriglyceridemia of 8.1%, though just 3% had plasma cholesterol levels >240 mg/dL and 2.1% had triglyceride levels >200 mg/dL, figures that are very similar to those reported by Baena et al,⁴ who used a more lenient classification criterion in this respect. Another finding common to both studies was the absence of diabetes in both groups of young persons. This is not surprising, given that this disease starts to become detected with effect from the age of 40 years.

The most notable finding in the Chilean study is the high proportion of young persons with a sedentary lifestyle (95%), to which should be added a 32% rate of overweight or obesity. These findings coincide well with those of other Chilean studies that analyzed groups of persons who were older and had a different social, economic and cultural level⁸ (Figure 1). A sedentary lifestyle was associated not only with overweight, but also with smoking, hypercholesterolemia and hypertension. It therefore appears that a high rate of persons with a sedentary lifestyle is a distinctive trait of the Chilean population, which thus differs from the lower rates found in Spain.⁶ Equally worrying is the high prevalence of overweight and obesity, bearing in mind that their presence at early ages is associated with the development of insulin resistance, hypertension and increased cholesterol concentrations in adulthood.⁹ The high prevalence of these risk factors in Chilean students therefore represents a very pessimistic prognostic factor in relation to the development of atherosclerosis at later ages.

Age and Coronary Risk Factors

With the adoption of stricter classification criteria for coronary risk factors, it is hardly surprising that their prevalence has increased in various parts of the world. These stricter criteria are derived from different studies that have demonstrated the benefits in the reduction of atherosclerosis and its complications by attaining lower figures for blood pressure, cholesterol, and blood glucose, together with the absence of smoking. The risk factor rates vary with age and they can have a different influence on the clinical manifestations of coronary disease. Smoking is more prevalent at early ages and it tends to

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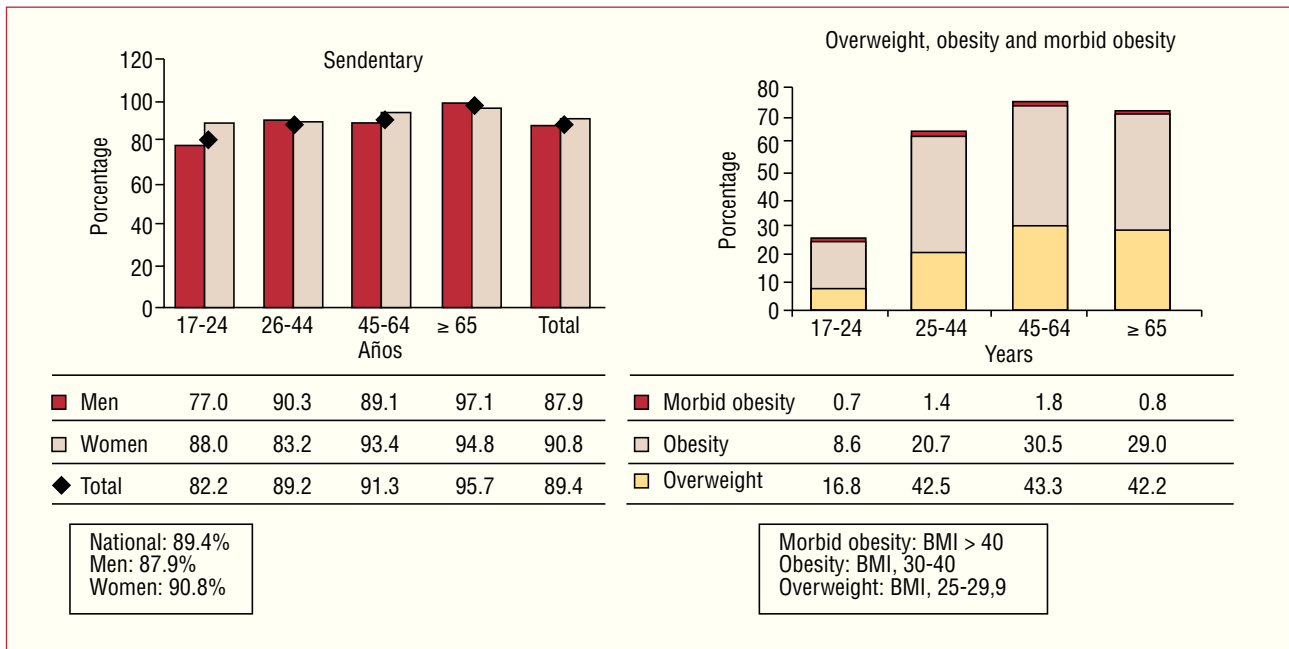


Figure 1. Prevalence of a sedentary lifestyle, overweight and obesity in the National Health Survey undertaken in Chile in 2003. Adapted from the 2003 National Health Survey, Chile.⁸ Sedentary lifestyle: no sports or physical exercise outside work for at least 30 minutes 3 times a week during the last month. BMI: body mass index.

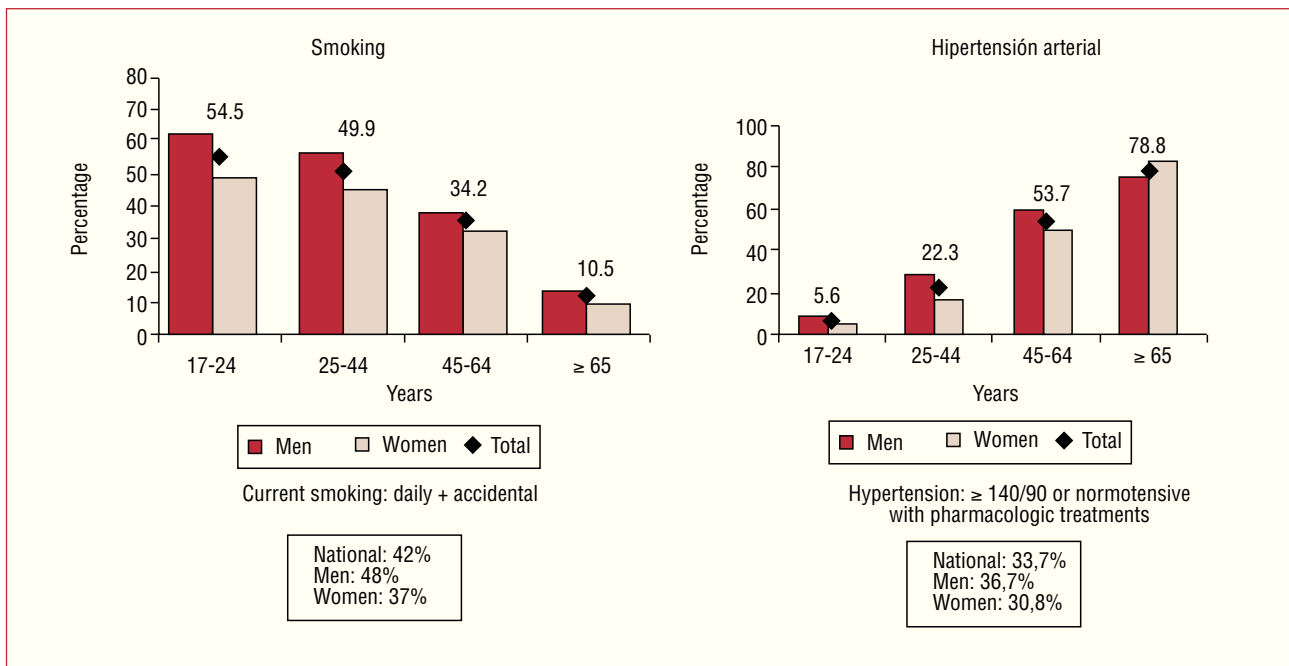


Figure 2. Changes in the prevalence of smoking and hypertension according to age in the National Health Survey in Chile in 2003. Adapted from the 2003 National Health Survey, Chile.⁹

decrease significantly with effect from the age of 60 years^{8,10} (Figure 2). Most population studies have found that smoking is much more common in men than in women. Examination of the age distribution of patients with a myocardial infarction shows that the incidence of this disease is much higher in men aged 40-60 years,

after which the incidence of infarction tends to become the same in both sexes, and with effect from the age of 70 years it is more common in women. Smoking is associated with earlier clinical manifestations of coronary disease, especially myocardial infarction.¹¹ Although the precise mechanism by which smoking favors coronary

disease is unknown, it may have a proinflammatory function in endothelial damage and the occurrence of vasospasm in the coronary arteries. In women who have a myocardial infarction before menopause smoking is also the most prevalent risk factor, together with lipid metabolism disorders of a genetic origin.

The prevalence of obesity, hypertension, hypercholesterolemia, and diabetes also tends to rise with increasing age^{8,10} (Figure 2). Diabetes is much more common after the age of 60 years. This increase in the risk factors with age is more evident in women; in fact this has been an argument that has been put forward as one of the possible causes of their greater mortality from infarction as compared with men.¹²

Treatment of Coronary Risk Factors

Despite the greater dissemination among the general public of the importance of coronary risk factors and the need to establish a healthy lifestyle, no greater awareness of the problem nor a reaction to it is evident. Indeed, as shown by this study undertaken in the VII region of Chile, smoking still remains highly prevalent. This, coupled with the level of physical activity and overweight, all have a bearing on the increase in atherosclerosis. Other population studies have shown similar trends.⁴

Those cases where measures have been taken to restrict smoking and stimulate a more healthy lifestyle have achieved a reduction in coronary disease and general mortality, as witnessed by the success of the north Karelia project in Finland.¹³ The United States, too, has seen a tendency towards a decrease in cardiovascular death, coinciding with a greater restriction in smoking and more education aimed at changes in lifestyle. It remains to be seen whether the new laws restricting smoking recently introduced in Spain and Chile will be complied with and have the same long term impact as in the United States. Additionally, the implementation of ever more strict guidelines for the treatment of coronary risk factors is resulting in more persons liable to require treatment, which, together with the low perception of the problem by those who are affected, makes it even more difficult to fulfill the expectations associated with a satisfactory control.

It is a fact that most human beings only react with a change in lifestyle habits when they are faced with disease. The best example of this is coronary disease. During the initial months following a myocardial infarction there is a drastic reduction in smoking and an increase in a healthier diet. However, with the passage of time, this behavior tends to be relaxed, and there is a return to a sedentary lifestyle and overweight, as well as an increase in levels of cholesterol and blood glucose. The physicians who treat these patients also become accomplices to these attitudes by not instructing their patients adequately about the importance of controlling the risk factors more strictly

and complying better with the secondary prevention measures, as demonstrated in the Euroaspire study, in which a high percentage of patients continued to smoke with high values for blood glucose, cholesterol, and hypertension.¹⁴ A similar situation was found in the long-term follow-up of a population of coronary patients at our center.¹⁵

The United States implemented a program of secondary prevention in community hospitals that involved a large number of health care professionals, such as nurses, nutritionists and physicians, aimed at achieving better compliance with the relevant medical therapy after a coronary event. This study, known as CHAMP, achieved very satisfactory and notable results regarding the long term reduction in new coronary events, associated with better control of the risk factors and medical treatment.¹⁶ This is a model that warrants copying and shows that the incorporation of other non-medical health care professionals and a good group organization can achieve much better results concerning the control of risk factors. This requires more willingness, it is not just a question of resources. Something similar could be implemented in primary prevention.

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