Commentary: Prevention of coronary heart disease in South Asia—containing the physical inactivity epidemic

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Cardiovascular disease is becoming a major health burden in developing countries.\(^1\) The prevalence of coronary heart disease (CHD) in India has more than doubled in the past two decades and the prevalence in urban Indians is approaching the figures reported in migrant Asian Indians.\(^2,3\) With increasing rates of urbanization in India, major changes in lifestyle patterns have occurred for a large proportion of individuals. This has led to a trend towards decreasing physical activity due to improved transportation and availability of energy saving devices, increasing weight and consequently increasing rates of diabetes, hypertension, and dyslipidaemia in urban populations.\(^3\) Comparisons of CHD risk factor prevalence between low-risk rural populations and urban populations in India,\(^5\) and studies among emigrant South Asians,\(^4\) suggest that increased physical activity would be an important measure for prevention of coronary artery disease in South Asians.

Physical inactivity is a well-established risk factor for CHD in Western populations and is associated with about a twofold increase in risk of CHD.\(^5\) A crucial question of public health relevance concerns the differences in level of risk factors between populations and the generalizability of Western guidelines for the prevention of CHD in the Indian population. It has been postulated that people of Indian ethnicity have an increased susceptibility to CHD due to both genetic factors predisposing to high levels of metabolic cardiovascular risk factors associated with insulin resistance e.g. central adiposity, glucose intolerance, hyperinsulinaemia, and dyslipidaemia (metabolic syndrome), as well as to environmental influences which lead to weight gain, rise in blood cholesterol, and blood pressure.\(^1\) Whether the cardiovascular effects of physical activity are similar in the Indian population has yet to be clarified. Epidemiological data on risk factors in India are limited. As prospective cohort studies for evaluation of CHD risk factors do not exist in India, case-control studies can provide important information regarding CHD risk factors despite their limitations. Pais \textit{et al.} has shown that traditional risk factors such as smoking, hypertension, cholesterol, and abdominal obesity are important risk factors in subjects in India.\(^6\) The case-control study carried out by Rastogi \textit{et al.} investigating the relationship between physical activity and CHD in urban Indian populations published in this issue of the \textit{International Journal of Epidemiology} provides additional information on the epidemiology of risk factors in India.\(^7\)

The authors conducted a hospital-based case-control study and collected data from 350 cases of acute myocardial infarction and 700 controls matched in age, gender, and hospital in New Delhi and Bangalore. Physical activity levels were assessed using a validated physical activity questionnaire which focused on occupational and other non-leisure time activities, in addition to leisure-time exercise. One of the main findings is that...
moderate intensity exercise such as brisk walking for a frequency of 35–40 minutes a day is protective for CHD which is consistent with US recommendations stating that individuals accumulate at least 30 minutes or more of moderate-intensity physical activity on most or preferably all days of the week.8 A further finding is that sedentary activity such as television viewing is also associated with increased CHD risk independent of leisure-time activity, which is in keeping with studies from the US showing television watching to be associated with increased risk of obesity and diabetes, major risk factors for CHD.9 Despite the useful information that case-control studies provide one should recognize the limitations inherent in case-control studies including recall biases and the selection bias that may arise with use of hospital-based controls. A further limitation of the study is the generalization of the findings as the survey was only carried out in one urban hospital each in New Delhi and Bangalore. Types of physical activities and occupational activity are likely to vary from region to region and between urban and rural areas with varied cultural populations. Nevertheless the study provides evidence that physical activity is protective for CHD in urban Indians and suggests that US guidelines for physical activity also apply to the urban Indian population.

Physical activity may offer additional advantages for risk reduction in South Asians wherever they live. Physical activity is known to improve insulin sensitivity and high-density lipoprotein cholesterol, and reduce central adiposity,5,10 risk factors highly prevalent in South Asians. More epidemiological and prospective studies are needed to investigate the effects of physical activity on cardiovascular metabolic risk factors and coronary risk in South Asian Indians and to explore possible genetic-environmental interactions. It is likely that increasing physical activity will be an important factor for the prevention of CHD in India but it remains to be seen whether promoting physical activity in India will prove to be as difficult as in Western societies where physical inactivity remains widespread.

References