Preventing cardiovascular morbidity in Sri Lanka; an appraisal of community based methods

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There is a rapid increase in the morbidity and mortality associated with cardiovascular diseases (CVD) in the developing world[1]. This cardiovascular disease epidemic has largely remained unnoticed.

As the life expectancy increases in countries like ours[2] individuals are being exposed to CV risk factors longer. The morbidity and mortality due to CVD have increased substantially during the last decade and has become the most important cause for hospital admission and death in 1995 in Sri Lanka[3]. To overcome this problem community based preventive measures need to be adopted.

Cardiovascular disease prevalence is modulated mainly by environmental factors[4]. Countries such as Germany, France and Japan have shown dramatic reduction in CVD mortality by combining community based preventive strategies and individualised therapeutic modalities[1].

A recent study comparing the long term survival of elderly US and Canadian patients after acute myocardial infarction showed similar outcome inspite of strikingly higher rates of use of cardiac procedures in the US. This was partly attributed to the rigorous preventive measures adopted in Canada[5]. The importance of population based approach to reduce morbidity from CVD are increasingly being emphasised[6].

This editorial expounds the need to adopt community based strategies to reduce the morbidity and mortality from CVD in this country.

In preventive medicine 2 types of strategies are employed. One is the community based 'population strategy' the other is an individual based 'high risk strategy'. These are complimentary to each other[7].

These preventive measures can be introduced at various stages of risk factor exposure and at various stages of disease process.

Primodial prevention

Primodial prevention aims to prevent the development of risk behaviour in a group which has not been exposed to the risk factors and is unlikely to develop the disease in the near future. Young school children are such a target group.

In some countries a Heart Health Teaching Programme is initiated from the first year of schooling[8]. By this method children are given an opportunity to learn healthy life styles.

This is important as experimenting with smoking, one of the impotant risk behaviour starts usually between the ages of 6-11 years. The habit formation is also rapid leading to a prevalence rate of 40% among 15 years old boys in some countries[9]. The eating habits are also learnt during childhood.

In Sri Lanka children are exposed to various behavioural practices through mass media and entertainment programmes. Thus creating a conducive envicrnment to acquire unhealthy life style. Hence introduction of primodial prevention is recommended and steps should be taken by intersectoral action between Health and Educational sectors.

Primary prevention

Primary prevention is a method adopted to avert occurance of disease in a population which is exposed to risk factors. The risk factors which are determined by life style and some physiological factors are the main targets of action in primary prevention.

Diet and Salt: In the 1950's Ancel Keys observed the association between diet and heart disease[10]. This lead to detailed research into this area. Major observational studies like the Seven Countries Study

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and the Framingham Heart Study[11] showed clear association between blood cholestrol level and diet. This was confirmed by trials like the Oslo Heart Study[12].

With the recent increase in fast food restaurants in our country people are tending to change their food habits. Changes in food habits have been associated with increased CV risk[13]. We need epidemiological studies on food consumption pattern and monitoring of changes to institute proper preventive measures.

Diet also supplies antioxidants and Folate which are also associated with CV risk[14]. Though there are no concrete evidence of benefit of these factors from controled trials the available evidence from observational studies suggest benefit[15]. These components are found in abundance in fresh fruits and vegetables. The change in our diet habits may reduce their intake[10].

According to available data the average salt intake is high amongst Sri Lankans[16]. This is disturbing in the light of growing concern about the role of salt in Hypertension[17]. With the change of food habits with increased processed meat and salted foods the intake may increase further.

At present there is a need for a National Nutritional Policy to encourage use of fresh fruits and vegetables and to reduce meat, dairy products and salt consumption.

Smoking : Smoking is a major health problem in the developing countries. In the near future tobacco will become the single most important cause of death accounting for 12.3% of global deaths[18]. Many countries have introduced tough measures to curtail its spread. Recently the US government banned advertising and forced companies to restrict sales to adults[19]. Many countries have shown impressive reduction in tobacco consumption by legislative and restrictive measures[20]. With increasing restriction of sales in the west US tobacco companies have started to target Asian countries[21].

In Sri Lanka the prevalence of smoking among adult males is about 50%[22]. The need for legislative measures to restrict sales and promotion has previously been stessed[23]. However little has been done so far.

Hypertension: Hypertension is an important problem in our country. Studies have shown 40% prevalence rate[16]. The majority have mild Hypertension. Treatment of mild Hypertension is a grey area in Hypertension management. However analysis of the Multiple Risk Factor Intervention Trial has shown increased number of deaths in the mild Hypertension group as compared to the severe Hypertension group[24]. This fact needs to be taken into serious consideration in our context.

Though Hypertension is mainly treated on an individualised approach, behavioral modification can help to reduce blood pressure in the population at large. The role of stress and increased sympathetic activity has been well known to be associated with CVD mortality and Hypertension. This area has not been studied well in human subjects[25]. Meditation may have a place in reducing stress and sympathetic over activity.

Consumption of alcohol is known to increase blood pressure. Studies have shown that reducing the intake of alcohol helps in reducing the blood pressure[26]. Diet also affects the blood pressure. A well conducted recent study has shown that diet rich in fruits and vegetables can reduce the blood pressure significantly[27].

Exercise and Obesity: Central obesity is an important CV risk factor. The Gothenberg study clearly demonstrated that central obesity is an independant risk factor for CVD[28]. The risk factors for the development of central obesity includes sedentary life style and male sex. The prevalence of obesity is increasing amongst Asians and is a growing problem in developing countries[29].

These facts highlights the need for promotion of exercise programmes and to buildup awareness of body image to reduce the prevalence of obesity in our country.

Secondary prevention

Secondary prevention is targetted at a group which has already developed the disease. All primary preventive measures are applicable to this group.

There are two main areas where community based approaches have shown much benefit. One

is the time delay in the treatment of acute myocardial infarction and the other is the treatment of cardiac arrest.

Early treatment of myocardial infarction has consistantly shown functional and survival advantages[30]. Community based education programmes and education of target groups have shown significant reduction in the time delay to treatment[31].

Community based cardiopulmonary resuscitation programmes have shown benefit. Many countries have introduced such programmes. In acute myocardial infarction one third of the patients die before reaching the hospital. Many of them die due to primary ventricular fibrillation which responds well to CPR without any sequale[32]. Thus the community is considered as the ultimate coronary care unit[33].

The Presidential Task Force report of 1992 has given due prominence to the establishment of CPR programme[34]. However progress has not been made since then.

Implementation

There is a great need for epidemiological studies to identify the prevalence of risk factors in various communties. Without these basic data preventive measures cannot be planned.

The proper implementation of prevention require clear policy statements and commitment on the part of the government and the health professionals.

Sri Lanka has made much progress in the health care situation. Our infant mortality and maternal mortality rates are lowest in the region. We have a high life expectancy at birth[2]. These factors have contributed to move to the third stage of health transition[35]. Further movement towards full transformation can be augmented by reducing the mortality and morbidity from CVD by community based approaches.

References

1. Lopez AD. Assessing the burden of mortality from cardio-vascular diseases. *World Health Statist Quart* 1993; **46**: 91-96.
2. World Health Statistics Annual 1995. World Health Organization-Geneva 1996.
3. Annual Health Bulletin. Sri Lanka 1995. Ministry of Health.
4. Marmot MG, Syme SL, Kagan A, Kato H, Cohen JB and Belsky J. Epidemiologic studies of coronary heart disease and stroke in Japanese men living in Japan, Hawaii and California: prevalence of coronary and hypertensive heart disease and associated risk factors. *Am J Epidemiol* 1975; **102**: 514-525.
5. Tu JV, Pashos CL, Naylor D, et al. Use of cardiac procedures and outcomes in elderly patients with myocardial infarction in the United States and Canada. *N Engl J Med* 1997; **336**: 1500-5.
6. Moher M, Schufield T, Weston S, Fullard E. Managing established coronary heart disease (editorial) *Br Med J* 1997; **315**: 68-69.
7. Rose G. Strategy of prevention: lessons from cardio-vascular disease. *Br Med J* 1981; **282**: 1847-51.
8. Bovet P, Shamlaye C and Paccaud F. Epidemiologic transition to chronic diseases and community based program of prevention of cardiovascular diseases in Seychelles. Cardio Update (New Delhi) 1996; **1**: 10-22.
9. Prevention of coronary heart disease: Report of a WHO Expert committee. Geneva. World Health Organization, 1982. WHO Technical Report Series **678**: 34.
10. Keys A. Mediterranean diet and public health: personal reflections. *Am J Clin Nutr* 1995; **61**: 1321 S-3 S.
11. Kannel WB, Castelli WP and Gordon T. Cholestrol in the prediction of atherosclerotic disease. New perspectives based on the Framingham study. *Ann Intern Med* 1979; **90**: 85-9.
12. Hjerman I, Holme I, Byre KV and Leven P. Effects of diet and smoking intervention on the incidence of coronary heart disease. *Lancet* 1981; **2**: 1303-10.
13. Keys A, Anderson JT and Grande F. Prediction of serum cholestrol of man to changes in fats in the diet. *Lancet* 1957; **2**: 959-61.
14. Pancharuniti N, Lewis CA, Saukerlich HE, et al. Plasma homo-cysteine, folate and vitamin B 12 concentrations and risk for early-onset coronary artery disease. *Am J Clin Nutr* 1994; **59**: 940-8.
15. Gaziano JM. Randomized trials of dietary antioxidants in cardiovascular disease prevention and treatment. *Journal of Cardiovascular Risk* 1996; **3**: 368-71.
16. Mendis S, Ranasinghe P and Dharmasena. Prevalence of highpertension in Sri Lanka - a large population study in the central province. *Ceylon Medical Journal* 1987; **32**: 121-7.
17. Dyer AR, Elliott, Marmot M, Kesteloot H, Stamler R and Stamler J. Strength and importance of the relation of dietary salt to blood pressure. *Br Med J* 1996; **312**: 1661-4.
18. Tobacco or health: First global status report. Geneva. World Health Organization 1996.

19. Beecham L. US tobacco firms agree to $ 369 bn deal (News) *Br Med J* 1997; 314: 1849.

20. Roemer R : ed. Legilative action to combat the world tobacco epidemic. 2nd ed. Geneva. WHO. 1993; 7-22.

21. Wallerstein C. US tobacco firms target Asia. (News) *Br Med J* 1997; 315: 209.

22. Mendis S. Tobacco use in a rural community in Sri Lanka. *Ceylon Medical Journal* 1988; 33: 23-26.

23. Samarasinghe D. Reducing tobacco use in Sri Lanka. *Ceylon Medical Journal* 1992; 37: 68-71.

24. Hypertension control : Report of a expert committee. Geneva. World Health Organization, 1996. WHO Technical Report Series 862: 10-16.

25. Zancheti : ed. Neural and Psychological mechanisms in Cardio-vascular disease. Italy. Lasa Editrice Il Ponte: 1972; 211.

26. Marmot MG, Elliott P Shipley MJ, et al. Alcohol and blood pressure: the INTERSALT study. *BrMedJ* 1994; 308: 1263-7.

27. Apple LJ, Moore TJ, Obarzanek E, et al. For the DASH Collaborative Research Group. A clinical trial of the effects of dietary patterns on blood pressure. *N Engl J Med* 1997; 336: 1117-24.

28. Larsson B, Svardsudd K, Welin L, Wilhelmsen L, Bjorntorp P and Tibblen G. Abdominal adipose tissue distribution, obesity and risk of cardiovascular disease and death: 13 year followup of participants in the study of men born in 1913. *Br Med J* 1984; 288: 1401-4.

29. Per Bjorntorp. Obesity. *Lancet* 1997; 350: 423-6.

30. Koren G, Weiss AT, Ben-David AT, Hasin Y, Luria AH and Gotsman MS. Prevention of myocardial damage in acute myocardial ischaemia by earlier treatment with intravenous strepto-kinase. *N Engl J Med* 1985; 313: 1384-9.

31. Herlitz J, Hartford M, Blohm M, et al. Effect of media campaign on delay times and ambulance use in suspected acute myocardial infarction. *Am J Cardiol* 1989; 64: 90-3.

32. Myerburg RJ, Kessler KM, Zaman L, et al. Survivors of prehospital cardiac arrest. *JAMA* 1982; 247: 1485-90.

33. Cardiopulmonary resuscitation and the ultimate coronary care unit. *JAMA* 1980; 244: 510-11.

34. National Health Policy-Shri Lanka. Report of the Presidential Task Force on formulation of a national health policy for Shri Lanka. Colombo. 1992.

35. Amala de Silva. Health transition: the economic issue. *Ceylon Medical Journal* 1997; 42: 1-4.