

## **Preventive cardiology: a brief review from developing country viewpoint**

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Cardiovascular disease is a major health problem throughout the world and a common cause of premature morbidity and mortality. The recent trend shows that cardiovascular disease is also becoming a major problem in developing countries. The leading causes of death such as infectious diseases and malnutrition in developing countries are going to be replaced by noncommunicable disease in near future. By the year 2020, noncommunicable diseases are expected to account for 7 out of every 10 deaths in the developing regions, compared with less than half at present<sup>1</sup>. Cardiovascular disease is one of the major component of the noncommunicable diseases.

The projected rate of circulatory diseases in India per 100 000 for 1985 was 271; for 2000, 457 and for 2015, 534, which is higher than for other causes such as cancer<sup>2</sup>. The incidence of cardiovascular disease among all admitted medical cases in T.U. Teaching Hospital of Nepal was 20.2% in 1994. Coronary Heart Disease (CHD) and Rheumatic Heart Disease (RHD) were the commonest amongst all<sup>3</sup>. Major cases in Shaheed Gangalal National Heart Center of Nepal in 2002 and 2003 were CHD and RHD<sup>4</sup>.

The prevalence of RHD is very high in developing regions. It ranges from 1 per 1000 to 5.4 in different studies in various developing countries<sup>5, 11</sup>. An isolated school survey in Kathmandu city of Nepal reported a prevalence of 1.2 per 1000 in hilly areas, whereas it was 1.35 in the rural community<sup>6,7</sup>. The prevalence of RHD in developed countries declined sharply in last decades, which was observed especially after the introduction of antibiotics. RHD is the commonest cause of hospital admission in cardiology department as well as the second commonest cause for open heart surgery in Nepal<sup>4,8</sup>. Rheumatic fever and its recurrence is also high in these areas.

CHD is the major cause of mortality in the western world. In spite of improved management during last decades, it still remains an important prevalent disease in developed countries. The age adjusted prevalence of CHD among people aged  $\geq 40$  years was 13.9 % in men and 10.1 % in female American adults<sup>9</sup>. Similarly it was 8% in men and 5% in women over 44 years of age in South West London<sup>10</sup>.

Although there is insufficient data regarding CHD in developing countries, it still has an important place in cardiovascular disease series. Recent surveys in India showed nearly 10% (96.7/1000) affected with CHD<sup>2</sup>. It was the commonest admitted cardiovascular cases in major hospitals in Nepal<sup>3,4</sup>.

Smoking, diabetes mellitus, hypertension, dyslipidemia and obesity are well established risk factors for CHD which are also applicable in the developing world. New emerging risk factors like homocysteine level, fibrinogen factors are still under study. Control of these established risk factors is important to reduce the incidence of coronary heart disease. The main underlying cause of rheumatic fever, rheumatic recurrence and rheumatic heart diseases is antecedent group A streptococcal upper respiratory tract infection. Prompt and effective penicillin therapy prevents the initial attack of rheumatic fever and continuous chemoprophylaxis against streptococcal infection prevents its recurrence and rheumatic heart disease.

The standard diagnosis and treatment of these cardiovascular diseases are very expensive. Besides basic investigations like ECG, X-ray and Echocardiography, the other diagnostic tools like coronary angiogram, nuclear imaging, CT and MRI are less available and not affordable by all patients in developing regions. There is also limitation in the availability of costly interventional, surgical treatment, due to which many cardiac cases are under investigated and hence inadequately treated. Although the mortality from cardiovascular disease is reduced in developed countries due to better investigations and treatment both medical and surgical, the cost is always a matter of great importance. This fact generated the importance of shifting emphasis from often highly expensive investigations and treatments to prevention in many areas of cardiovascular disease.

The rheumatic fever/rheumatic heart disease comprehensive program for prevention in Baltimore, USA, 1960-1981 achieved a marked decline in incidence rate per 100,000 from 14.0 in 1965 to 1.0 in 1981-83. Similarly in Havana, Cuba 1972-87 primary and secondary prevention achieved a

decrease in incidence of RF from 38.1 to 10.6 per 100,000 and prevalence of RHD from 1.7 to 0.2 per 1,000 between 1972 and 1987<sup>11</sup>. Primary treatment with penicillin for every streptococcal upper respiratory infection will decrease the number of rheumatic fever and secondary chemoprophylaxis for every rheumatic fever and rheumatic heart disease will prevent the recurrence of rheumatic fever and rheumatic heart disease. Easily available medical services and treatment with penicillin, patient education and public awareness are the mainstay for primary and secondary prophylaxis. Recently, rheumatic fever vaccine is under study with distinct possibility<sup>12, 13</sup>.

Management of risk factors by giving up smoking, weight management, optimum physical activity, high fiber and low saturated diet, good control of diabetes mellitus and hypertension can be achieved with patient and public education<sup>14</sup>. Diagnosed CHD cases should be closely followed up with optimum control of risk factors and necessary treatment.

Primary and secondary preventive measures through early diagnosis and treatment, patient education, people awareness programs, medical service providers' training, availability of penicillin and health education materials in primary health care center play key roles in reducing the cardiovascular morbidity and mortality. There is a worldwide need for further development and implementation of prevention strategies for combating the incidence of cardiovascular diseases.

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