

Requirements of a coronary heart disease risk factor intervention programme for the coloured population of the Cape Peninsula

K. STEYN, J. FOURIE

Summary

The coloured population of the Cape Peninsula has been identified as having a high prevalence of risk factors for coronary heart disease (CHD), notably hypertension, cigarette smoking and hypercholesterolaemia. The need for an appropriate and effective CHD intervention programme, directed at the population as a whole, has become urgent.

Three central problem areas relating to hypertension control — diagnosis, management and compliance — will have to be addressed. Hypertension was underdiagnosed among men, particularly those aged 25 - 44 years. Apart from educating this group regarding the need to have their blood pressure measured, detection programmes are therefore needed at the workplace to improve hypertension diagnosis. Inadequate management of hypertension was commonest in women aged over 45 years. Compliance with hypertension treatment regimens was poor in all men as well as in both sexes belonging to the lower socio-economic strata. Establishing easily accessible blood pressure stations for monitoring blood pressure and educating hypertensives regarding their condition could lead to improved management and compliance.

Coloureds were found to smoke heavily, and the women had the highest smoking prevalence of all South African women. Furthermore, the age of onset of smoking is decreasing among coloured children. A general anti-smoking campaign directed at all South Africans is necessary to control smoking. Anti-smoking education programmes at primary school level are of particular importance to prevent the onset of the habit.

More than 70% of coloureds had a serum cholesterol level imparting CHD risk, few followed a prudent diet and their knowledge of the prudent diet was poor. Health education programmes to promote the prudent diet are required.

The need for appropriately trained health educators in schools, workplaces, health clinics and all hospitals has been identified. An extensive health education service should be expanded by including the use of mass media, particularly television, to promote health.

S Afr Med J 1990; 78: 78-81.

In 1986 Benatar's¹ report on medicine and health care in South Africa described the disease and mortality profile of the coloured population as comparable to the profile of developing countries. Coronary heart disease (CHD), common among South African whites, is increasingly manifesting itself in the coloured population. This finding led to the CRISIC study, which investigated CHD risk factors in the coloureds of the Cape Peninsula.

Previous reports²⁻⁷ of the CRISIC study have shown the

coloured population of the Cape Peninsula to be at high risk of developing CHD. Only 5,4% of men and 10% of women were completely risk-free, while 25,6% of men and 20,6% of women were at extremely high risk with the coexistence of two or more of the major risk factors.⁷ Little has been done to alleviate these risk factors, and the need for an appropriate and effective CHD intervention programme has become urgent.

It has been suggested that the primary prevention approach for the whole population is more cost-effective than secondary prevention involving screening for and treatment of high-risk individuals in the population. The first approach is generally directed at removing underlying causes. This is preferable to the second approach, which often is not directed at removing the underlying causes but identifies and treats susceptible individuals. Secondary prevention has a place only if the underlying causes remain unknown or uncontrollable or as an adjunct to the primary prevention approach.⁸

An effective CHD prevention programme for the coloured population of the Cape Peninsula should therefore be directed primarily at the population as a whole. Ideally it should reach individuals at a young age to ensure the adoption of healthy habits and should reach the population without any conflicting messages that might confuse people. Recommendations should be easy to follow and facilities in the community should make this possible. Healthy behaviour should become the norm and unhealthy behaviour should be rejected. A CHD intervention programme for the coloured population of the Cape Peninsula should be incorporated into a national CHD intervention programme for all race groups in South Africa.

In 1970 the American Inter-society Commission for Heart Disease Resources⁹ was among the first to suggest a comprehensive approach to the primary prevention of atherosclerotic diseases. In 1984 this approach was updated by the Commission's Atherosclerosis Study Group.¹⁰ Many of these recommendations formed the backbone for intervention programmes initiated throughout the USA, and this has probably contributed to the reduction in CHD in that country. In 1982 a WHO Expert Committee¹¹ published its guidelines for the prevention of CHD. By then, or soon thereafter, many countries^{12,13} and organisations had spent time and effort to formulate applicable CHD prevention programmes. A second WHO publication¹⁴ suggested that the threat of CHD in developing countries could also be averted by appropriate and timely intervention procedures.

An excellent overview of the elements of a national programme is the Canterbury report¹² on CHD prevention in the UK. This report suggests a national health policy that includes CHD prevention as a significant part of its strategy for promotion of health and prevention of disease.

Guidelines for hypertension reduction in the coloured population of the Cape Peninsula

The prevalence of hypertension among participants in the CRISIC study was 17,7% for men and 18,1% for women (age-

Centre for Epidemiological Research in Southern Africa,
South African Medical Research Council, Parowvallei, CP
K. STEYN, M.B. CH.B., M.D.
J. FOURIE, B.A. (NURS.)

standardised against the 1985 coloured population of South Africa). Blood pressure readings were adjusted for inappropriate cuff size in obese subjects.¹⁵ Three central problem areas relating to hypertension were identified.³ A significant number of hypertensives were undiagnosed; patient compliance with treatment was poor; and the majority of identified hypertensives were receiving inadequate treatment and monitoring.

Issues relating to inadequate diagnosis

The prevalence of undiagnosed hypertension was highest among men aged 25 - 44 years. In addition, their compliance with medication was worse than that in other age and sex categories, and consequently only 8% had controlled hypertension (blood pressure $\leq 160/95$ mmHg). Hypertensives in this group had had fewer blood pressure measurements during the preceding year than those in other age and sex categories. They also appeared to make less use of the health services than other groups.

Hypertension was also more prevalent and more often undiagnosed in subjects of low socio-economic status.³ Screening for hypertension in young men is therefore necessary, especially among the unskilled coloured labour force. This could be carried out effectively by occupational health nursing services at the workplace. Co-operation of the work force is necessary if occupational hypertension control programmes are to succeed. Workplace programmes will not reach the unemployed, however, and alternative strategies will need to be devised for this group.

Issues relating to poor compliance

Compliance with medication was poorer among men (particularly young men) than among women, and was also poor among subjects of low socio-economic standing. Strategies for improving compliance need to be devised, and young unskilled hypertensive men should receive particular attention.

Issues relating to inadequate management

During the year preceding the study 52,1% of all men and 63,7% of all women participating in the study had had their blood pressure measured. During the same period 72% of the hypertensives had had their blood pressure measured, implying that many of them may not have been diagnosed or not have received adequate treatment. General practitioners were the most popular providers of medical care for the participants, so they should therefore concentrate more specifically on hypertension diagnosis and treatment in the community. A nurse attached to the practice could assist with blood pressure monitoring and health education, reducing demands on the doctor's time.

A second target group requiring attention is hypertensive women aged 45 years and over. This group attended medical facilities more often than any other group in the study population, and although they were better compliers than other hypertensives 35,3% were not using adequate medication to control their blood pressure. Although inadequate patient compliance contributed to poor hypertension control, poor compliance on the part of medical personnel with respect to prescribing drugs and monitoring blood pressure may also have played a role. Effective hypertension control would therefore also include improved diagnosis, treatment and monitoring by medical personnel. Doctors and nurses should be trained in the correct procedure and use of the correct cuff size for accurate blood pressure readings. Patients should be informed of their condition, and should know whether their blood pressure is controlled or not, what drugs they are taking, and

the consequences of not taking drugs regularly. They should know the dietary and lifestyle modifications that are necessary to improve their blood pressure. Medical personnel cannot control a chronic disease in society without the co-operation of the patient, who in turn cannot co-operate unless informed.

Obesity was found to be pandemic among hypertensive coloured women in the older age group. There is therefore a need for dietary guidance to promote weight loss.

The high prevalence of hypertension among young men could in part be attributed to their high alcohol intake. In addition young participants, particularly men, reported a high salt intake. When hypertension is diagnosed, particularly in young men, treatment should therefore include dietary guidance in addition to medication.

Hypertension clinics at day and provincial hospitals or other suitable clinics could achieve good hypertension control. At hypertension clinics patient education and the monitoring of blood pressure can be optimised and treatment costs contained. Inexpensive drugs are often effective and if not contraindicated should be used in preference to more expensive ones.

Monitoring of blood pressure could be improved if blood pressure stations were to be established in easily accessible public places. The cost could be minimised by employing health workers specifically trained in blood pressure measurements to man these stations and refer hypertensives for further management by clinicians.

Finally, mass media suited to and directed at the coloured population should encourage them to have their blood pressure measured regularly, increase their physical activity, eat correctly and lose weight.

Guidelines for the reduction of smoking

In the CRISIC study the prevalence of smoking was higher in the lower socio-economic strata than in the higher strata, with 57,3% of coloured men and 41,2% of women overall smoking cigarettes. Smoking was often associated with alcohol use and, as portrayed by advertising, seen as desirable and acceptable behaviour. Coloured women had the highest prevalence of smoking of all South African women. Unlike hypertension the problem of smoking becomes a medical one only after the damage done becomes obvious and irreversible. Smoking intervention should be based on the whole-population approach, and mass media methods should be used. The successful methods of advertising employed to increase the use of tobacco are directed mostly at the young and underdeveloped populations.^{16,17}

Anti-smoking campaign

Central to the control of smoking is the need for a strong anti-smoking campaign supported by the government.^{18,19} Anti-smoking measures should include a ban on tobacco advertising, health warnings on all tobacco products, increased tobacco tax, and a ban on sports sponsorship by tobacco companies. Generating a health fund directly from punitive taxation on tobacco could contribute to an anti-smoking campaign. Growing of tobacco should not be subsidised and the tobacco industry should be encouraged to replace its product with less harmful ones. Smoking in public places should be restricted by legislation.

Prevention

Educational programmes on the risk of smoking should be subsidised and made obligatory in schools. This should be initiated in primary school, because the age of onset of smoking

in the coloured population is very low and becoming lower. Anti-smoking education programmes should use advertising techniques that suggest that the norm of society is a non-smoking one, and highlight the true association between disease and smoking, including passive smoking. In the CRISIC study it was found that more respondents smoked over weekends than during the week. Anti-smoking advice should therefore be emphasised by means of television, radio and billboards at sports meetings during weekends. Anti-smoking programmes should also be directed at pregnant coloured women, since coloured women have the highest smoking rate of all South African women. Smoking can affect their unborn children and set a bad example for their young children. The campaign should also highlight the immediate benefit of stopping smoking for young people, since they are not generally motivated by health benefits in later life.

Support to stop smoking

Almost half the current smokers had attempted to stop smoking during the year preceding the survey. Men had a more positive attitude to stopping than women, as had better educated subjects compared with those with less education. Facilities should be offered to support smokers in their attempts to stop, particularly at the workplace and by introducing non-smoking policies. Organisations such as the South African National Cancer Association and the Heart Foundation of Southern Africa could co-ordinate such facilities in the community. General practitioners should know where to refer patients for support in their attempts to stop smoking.

An important aspect of support programmes is encouragement to smokers who have attempted to stop but have failed. Many people who eventually manage to stop smoking did not succeed with their first attempt, since smoking is an addiction that has to be broken. Health professionals presenting support programmes need to be encouraged to continue with their work despite numerous failures.

All these methods of intervention must be mobilised if a successful campaign against smoking is to be achieved. The effectiveness of some of these measures has been illustrated in Hong Kong¹⁸ and Greece.¹⁹

Guidelines to improve lipid profiles

The CRISIC study revealed that 72,8% of coloured men and 78,4% of women had serum cholesterol levels that imparted a risk of developing CHD.^{5,20} The magnitude of the increase in risk is such that the population approach is essential to improve lipid profiles for the coloured population as a whole.⁵ The coloured population consumes a typical Western diet,^{21,22} which has been shown to be associated with hypercholesterolaemia.⁵ The CRISIC study showed that 37% of energy in the diet of the coloured population was derived from fat. However, the polyunsaturated/saturated fat (P/S) ratio in their diet was favourable, ranging from 0,78 to 1,0. The guidelines for a prudent diet,⁹ accepted in most countries where CHD is prevalent, are appropriate for the coloured population as well as other groups in South Africa. The participants in the CRISIC study had a poor knowledge of the principles of the prudent diet. The diet should particularly be recommended for the young, in whom a reduced total cholesterol level can prevent the development of atherosclerosis.

Dietary intervention by means of the mass media is the only method by which sufficient people can be reached to shift cholesterol levels in the whole population.

Factors that reduce high-density lipoprotein cholesterol, such as obesity, physical inactivity and smoking, were prevalent

in the study population. Reducing these factors would increase HDL cholesterol levels and improve protection against CHD as well as confer other benefits.

Screening for abnormal lipid profiles can contribute to CHD control without excessive additional cost when used judiciously for patients with a high probability of having an abnormal lipid profile, based on a family or medical history, or for those with other major CHD risk factors. The use of appropriate age- and sex-specific cut-off points for total or low-density lipoprotein cholesterol, as suggested by the Heart Foundation of Southern Africa,²⁰ will contribute to the success of any CHD control programme.

General issues relating to a CHD intervention programme

An effective CHD intervention programme needs to assist the population in changing from an unhealthy to a healthy lifestyle. This includes changing from a typical Western diet to the prudent diet,⁹ which reduces serum cholesterol, blood pressure and body mass. Along with stopping smoking, increased physical activity and loss of excess body mass are needed. Skills in the effective management of psychosocial stressors are also often required.

Allowing tax rebates for private businesses that render health services by screening for hypertension and cholesterol and helping people stop smoking should increase the number of these programmes significantly.

The principles of the prudent diet⁹ include a total fat intake of not more than 30% of total energy, with equal amounts of saturated, mono-unsaturated and polyunsaturated fats (P/S ratio 1,0). Dietary cholesterol intake should not exceed 300 mg/d. Magnesium and calcium intake should be increased. In terms of food eaten it should be recommended that less fatty food be consumed, and that low-fat milk and lean meat be used. Salt and alcohol intake should be limited, and no more than 3 eggs per week should be allowed. The use of fresh and dried fruit and vegetables, particularly citrus fruits, bananas, legumes, potatoes, unrefined cereals, green leafy vegetables and tomatoes, is also to be recommended.

Health education and promotion

The CRISIC study has shown that effective health education is central to a successful CHD prevention programme.

The health facilities for the coloured population of the Cape Peninsula are extensive, with the exception of the services that should be provided by appropriately trained health educators. Health educators are needed in schools, workplaces, health clinics and all hospitals. Provision should be made for health educators who provide a consultation service to members of the public in addition to advising patients referred by general practitioners. Health education should become an important aspect of any health service and should be greatly expanded. At present CHD prevention does not form a significant part of the programmes of the few health educators working in the field. This situation must be rectified.

Health education at schools should receive urgent attention. The content should be based on the real health needs of the coloured community, an important component therefore being prevention of smoking and promotion of the prudent diet. The use of trained health educators in schools would improve results of such health programmes, for teachers are often as ignorant as their pupils about health needs and also require education. Health education at the workplace is underutilised and should be greatly expanded; this would be encouraged by providing incentives for employers. Trained health educators

with appropriate aids should be available to visit workplaces and give lectures.

In addition to an extensive health education service, the role of the mass media (particularly television) in health promotion should be greatly expanded. Television, the preferred medium of the coloured population,²³ certainly does not play the role in health promotion that it could and should.

The other mass media recommended by the study population were the newspapers, particularly as an adjunct to information given on television, at schools and at work. The radio was not recommended, and nor were magazines or pamphlets. Health education should not be given in a pedantic, prescriptive manner, but rather by utilising the techniques commonly employed in the advertising industry.

If the providers of health care for the urbanised coloured population, such as the local authorities and city councils, act on the findings reported here by means of an appropriate CHD intervention programme, consisting mainly of extensive health education, a major CHD epidemic could be prevented. CHD risk intervention, a typical need of westernised industrialised populations, would have to become a priority, along with the Third-World health needs that are at present considered when allocating health resources to the coloured population.

REFERENCES

1. Benatar SR. Medicine and health care in South Africa. *N Engl J Med* 1986; **313**: 527-532.
2. Steyn K, Jooste PL, Langenhoven ML *et al*. Coronary risk factors in the coloured population of the Cape Peninsula. *S Afr Med J* 1985; **67**: 619-625.
3. Steyn K, Jooste PL, Fourie JM, Parry CDH, Rossouw JE. Hypertension in the coloured population of the Cape Peninsula. *S Afr Med J* 1986; **69**: 165-169.
4. Steyn K, Jooste PL, Langenhoven ML *et al*. Smoking patterns in the coloured population of the Cape Peninsula (CRISIC study). *S Afr Med J* 1987; **71**: 145-148.
5. Steyn K, Benadé AJS, Langenhoven ML, Joubert G, Rossouw JE. Hypercholesterolaemia in the coloured population of the Cape Peninsula (CRISIC study). *S Afr Med J* 1987; **71**: 483-486.
6. Steyn K, Fourie J, Benadé AJS, Rossouw JE, Langenhoven ML, Joubert G, Chalton DO. Factors associated with high-density lipoprotein cholesterol in a population with high HDL cholesterol levels. *Atherosclerosis* 1989; **9**: 390-397.
7. Steyn K, Rossouw JE, Joubert G. The coexistence of major coronary heart disease risk factors in the coloured population of the Cape Peninsula (CRISIC study). *S Afr Med J* 1990; **78**: 61-63 (this issue).
8. Rose G. Sick individuals and sick populations. *Int J Epidemiol* 1985; **14**: 32-38.
9. Inter-society Commission for Heart Disease Resources — Atherosclerosis Study Group and Epidemiology Study Group. Primary prevention of atherosclerotic diseases. *Circulation* 1970; **42**: A55.
10. Atherosclerosis Study Group of the Inter-society Commission for Heart Disease Resources. Optimal resources for primary prevention of atherosclerotic diseases. *Circulation* 1984; **70**: 175A-193A.
11. WHO Expert Committee. Prevention of coronary heart disease. *WHO Tech Rep Ser* 1982; No 678.
12. *Coronary Heart Disease Prevention: Plans for Action*. London: Pitman, 1983.
13. WHO. European conference on primary prevention of CHD. Anacapri, Italy, 15 - 19 October 1984.
14. WHO seventh general programme of work covering the period 1984 - 1989. Cardiovascular disease. Geneva: WHO, 1983.
15. Maxwell MH, Waks AU, Scroth PC, Karam M, Dornfeld LP. Error in blood pressure measurement due to incorrect cuff size in obese patients. *Lancet* 1982; **2**: 33-36.
16. Editorial. Third world smoking — the new slave trade. *Lancet* 1984; **1**: 23-24.
17. Editorial. Tobacco sponsorship of sport: think again. *Br Med J* 1982; **284**: 365.
18. Mackay JM, Barnes GT. Effects of strong government measures against tobacco in Hong Kong. *Br Med J* 1986; **292**: 1435-1437.
19. Doxiadis SA, Trihopoulos DV, Phylactau HD. Impact of a nationwide anti-smoking campaign. *Lancet* 1985; **2**: 712-716.
20. Rossouw JE, Steyn K, Berger GMB *et al*. Action limits for serum total cholesterol: a statement for the medical profession by an *ad hoc* committee of the Heart Foundation of Southern Africa. *S Afr Med J* 1988; **73**: 693-700.
21. Langenhoven ML, Steyn K, Van Eck M, Gouws E. Nutrient intake in the coloured population of the Cape Peninsula (CRISIC study). *Ecology Food Nutr* 1988; **22**: 97-106.
22. Langenhoven ML, Steyn K, Van Eck M. The food and meal pattern in the Cape Peninsula coloured population (CRISIC study). *Ecology Food Nutr* 1988; **22**: 107-116.
23. Steyn M, Steyn K. Media use and preference related to coronary heart disease of the coloured population of the Cape Peninsula: the CRISIC study. *Curationis* 1989; **12**: 22-25.