Lifestyle hazards

Mauritius has found that it has rates of heart disease and hypertension as high as major developed countries. Now it is working positively to rectify this situation.

by the Mauritius Non-Communicable Diseases Study Group

In the space of a few decades, there have been remarkable reductions in morbidity and mortality due to infectious and parasitic diseases in most developing countries in all regions of the world. However, other threats to health in the form of the so-called "Western degenerative" or "lifestyle" diseases are emerging at rates that far outstrip what would be expected from the fact that people are living longer.

In many developing nations, already beset with economic, social and other health problems, the rates of heart disease, diabetes and hypertension are as high as or even higher than in major developed nations. These chronic diseases impose a destructive drain on communities through their association with sickness and premature death.

Mauritius, lying in the southern Indian Ocean to the east of Madagascar, is an example of a nation attempting to come to grips with these new health problems. Between 1942 and 1986, infective and parasitic diseases as a cause of death among Mauritians fell from 45 per cent to 2.8 per cent of all deaths. Over the same period, deaths from cardiovascular diseases increased from 3.9 per cent to *44.5 per cent* of total deaths.

The short period, 1982 to 1986, saw a dramatic rise in deaths attributed to diabetes mellitus, from 2 per cent to 6.5 per cent of all deaths, although improved case-finding and death certification practice may have contributed to this three-fold increase.

In 1982, even before this rise was documented, the government of Mauritius grew alarmed at routine disease statistics and sought assistance from WHO. In response, WHO sent a consultant, Professor Paul Zimmet, an Australian diabetes researcher and clinician who heads both the WHO Collaborating Centre for the Epidemiology of Diabetes Mellitus and the Lions-International Diabetes Institute in Melbourne.

He advised the government to conduct a study on the population-based sample, with the aim of documenting the nature and extent of the non-communicable disease problem. Further, if it was thought appropriate on the basis of the survey results, he urged the government to institute and evaluate a community-based non-communicable diseases prevention and control programme.

WHO support

When plans for a study were finally drawn up in 1986, the Mauritian Ministry of Health sought the assistance of the WHO Collaborating Centre in Melbourne. In turn, Professor Zimmet gained support from two WHO Collaborating Centres in Finland and the United Kingdom which had expertise in other areas of non-communicable disease epidemiology.

The survey of disease and risk factor prevalence was conducted over four weeks in early 1987. Two survey teams, each comprising about 20 local and overseas health personnel, worked concurrently at ten randomly selected survey sites. Data collected on 5,100 Mauritians included questionnaire information on medical and family history, and personal habits such as exercise patterns, smoking and alcohol consumption. Examination procedures included measures of obesity, blood pressure, electrocardiography, glucose tolerance tests, and other biochemistry including blood lipid levels. Most of the routine biochemical analyses, such as for cholesterol and uric acid, took place at the Central Laboratory in Mauritius, whilst more specialised tests were undertaken on specimens transported to the United Kingdom.

The survey was enthusiastically received by the population, and the overall response rate of 86 per cent was remarkable considering that participants had to give up a whole morning for all procedures to be completed. The interest of the community in their own health status augurs well for the future preventive programmes.

But the results were even more serious than predicted, with rates of non-insulin-dependent diabetes, coronary heart disease, hypertension and hypercholesterolaemia (high blood fats) amongst the highest reported in the world. No ethnic or socio-economic sub-group of the population was exempt.

Diabetes was found to exist in virtually epidemic proportions in all ethnic groups and social strata, the rates being several orders of magnitude higher than those of Western countries. In Mauritians aged 25 years and over, 12.7 per cent have diabetes and a further 17.5 per cent have impaired glucose tolerance (and are thus at high risk of developing the disease in the future). Western countries such as Australia and the USA have rates of non-insulin-dependent diabetes of between three and six per cent.

Furthermore, in Mauritian adults aged 45 and over, one in two has diabetes or is at high risk of developing it. Mauritians with diabetes are also more likely to have associated coronary heart disease, stroke, hypertension and high blood fat levels. High diabetes prevalence rates were seen even in young adults, which suggests a

Health check-up in Mauritius as part of the "non-infectious diseases" survey.
Photo Lions International Diabetes Institute ©

heavy toll of complications and an increasing burden on health resources in future years.

Similarly, the prevalence of hypertension was high. Once again, rates were high in young adults and rose dramatically with age. Of the population aged 25 years and over, 14.8 per cent have hypertension. In the over-45 age group, prevalence is 28 per cent.

Elevated fat levels

Coronary heart disease also occurred with high frequency in the population and, as a nation, the Mauritian population appears to have close to the highest percentage of people with elevated blood fat levels in the world. At least 50 per cent of the adult population have hypercholesterolaemia, and according to currently recommended levels more than 20 per cent would require intensive medical treatment for the condition. Although the survey did not rigorously investigate the prevalence of major complications of these disorders, the self-reported rates of angina, heart attack, stroke and gout were much higher in those with diabetes and hypertension by comparison with normal participants.

Current attempts at controlling these diseases are probably inadequate or ineffective. For example, a high proportion (85 per cent) of participants with previously known diabetes were on drug treatment, primarily with oral hypoglycaemic tablets. This proportion seemed high to the principal investigators, who felt that weight loss and dietary advice might be preferable in many cases. Of those on drug treatment, about one-third had unsatisfactory fasting glucose levels. Moreover, a disturbingly high proportion of young confirmed hypertensive participants were not on any treatment at all, a finding with important prognostic implications since these individuals would be at high risk of stroke and heart attack.

Disease risk factor levels were high within the population in general. Even in quite young adults, plasma cholesterol and triglyceride levels were disturbingly high. Rates of cigarette smoking among men (but not among women) were higher than among their counterparts in many Western countries; 58 per cent of men and 6.9 per cent of women were regular smokers.

Excessive alcohol consumption occurred principally in men, particularly younger ones, and women generally reported very low levels of regular overall physical activity and almost no leisure activity. An estimated 20 per cent of men and 33 per cent of women were overweight by international standards. The survey results have been assessed by an International Advisory Committee which has met with Ministry of Health officials in Mauritius.

Mother-to-be on the weighing-scales. The health authorities in Mauritius have shown a refreshing commitment to tackling their country's non-communicable disease problem.
Photo Alain Jean Ahkee

The government is currently planning and carrying out an integrated non-communicable disease intervention programme, along the lines of the WHO Interhealth proposals (Integrated programme for prevention and control of non-communicable disease through community health). Primary preventive activities will focus on behavioural and structural changes related to smoking, healthy nutrition, and levels of physical activity in the community. Secondary prevention targets include improved case detection, expanded health education services, and an upgrading of follow-up and rehabilitation facilities.

The Mauritian authorities have shown refreshing resolve in their commitment to prevention and control of their country's non-communicable disease problem. Their programme may well form a model on which other countries, both developing and developed, might base their own activities. ■