INTO THE HEART OF A MYSTERY

Heart disease has emerged as a major cause of death through illness, in Sri Lanka. Since the early 1980's ischaemic heart disease has been the leading cause of hospital deaths, accounting for nearly 10 percent of all deaths recorded annually in the country's hospitals. Most of these deaths have occured among the urban population and are generally traced back to high cholestrol diets, the stress factor and excessive tobacco smoking, and hereditary factors. Studies carried out recently, in London, now suggest that a genetic factor offers a solution to the puzzle of why urban South Asians have the World's highest rate of coronary heart disease and diabetes. In a column in the Third World journal *South* Judith Perera writes as follows about what researchers are suggesting regarding the heart disease mystery.

The mystery of why urban middle-aged South Asians have the world's highest rate of heart disease and diabetes has puzzled researchers for years. The phenomenon has been known since 1957, when a Singapore study of 10,000 autopsies showed heart disease had killed seven times more Indians than Chinese.

The higher vulnerability of South Asians to these two diseases holds regardless of where they live. In Fiji, for example, heart disease kills three times more Indians than Melanesians. And in Britain, which is near the top of the world league table for coronary illness, heart disease among South Asian immigrants is 50 percent above the national average.

Paul McKeigue of University College Medical School in London believes the cause is a metabolic disorder known as insulin resistance. If he is right, Indians Bangladeshis or Sri Lankans could reduce chances of falling prey to diabetes or heart disease by losing weight and exercising.

By the time they reach middle age, between 22 and 29 percent of South Asians in urban areas are diabetic, against an average 10 percent of US whites. Diabetes — a metabolic disorder in which the body is unable to deal properly with sugar also increases the risk of coronary heart diseases (CHD). But McKeigue, who is about to publish the results of his five-year study — mainly among imigrant communities — found CHD was much higher than normal even among non-diabetic South Asians.

Changes in diet and lifestyle in their new countries have also proved an unsatisfactory explanation: Indian immigrants to Britain and South Africa suffered substantially more heart ailments than immigrants from other part of the world. It seemed that something peculiarly South Asian caused the diseases. The cause was not related to any particular region, religion or culture, nor to known risk factors such as smoking, drinking, high blood pressure and high cholesterol: Melanesians in Fiji and Africans in Trinidad and Tobago smoke more heavily on average than Indians yet they have lower rates of heart disease. And high blood pressure is less common among Indian residents in South Africa, Guyana and Trinidad.

But a closer look at blood fats revealed a striking difference. In all South Asian communities, studies have consistently found low levels of high-density lipoprotein (HDL), a substance which protects against heart disease. They have also found high levels of triglycerides which, like cholesterol, tend to build up in blood vessels. In many countries triglyceride levels were 30-40 percent greater than in other ethnic groups. Both low HDL and high triglyceride levels are also associated with diabetes.

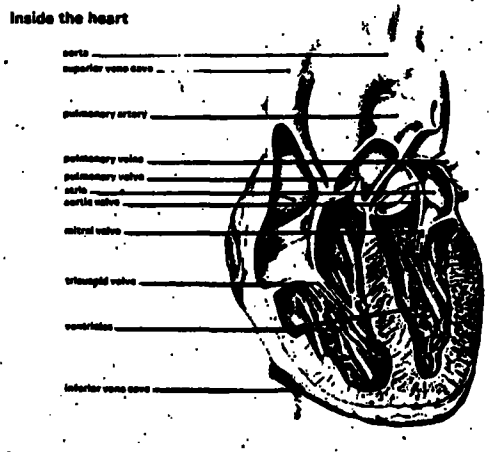
Other studies suggest that this is not the whole story, and that diabetes and glucose intolerance would account for an increase of only around 6 percent in the level of heart disease — not enough to explain the huge differences found in Singapore, Fiji and elsewhere.

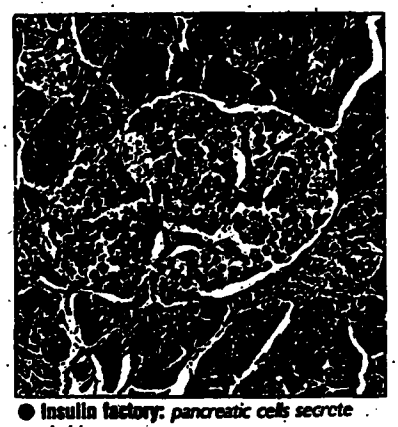
McKeigue believes there is an underlying factor which explains both the CHD and the diabetes — insulin resistance. The type of diabetes most prevalent in the Indian subcontinent — non-insulin-dependent diabetes (NIDD) — is not caused by a failure to produce insulin, the hormone which helps in processing sugar. People with NIDD produce excessive amounts of insulin when they eat sugar, but still fail to deal with it properly — hence insulin resistance. It is the high levels of insulin which increase the risk of heart disease, by pushing up triglycerides and reducing HDL levels in the blood. Insulin may also act directly to increase fatty deposits in the blood vessels.

Insulin-resistant diabetes is strongly associated with being overweight, and, according to Paul McKeigue, a particular pattern of obesity. Overall body weight is not as important as where the fat is deposited. In insulin resistance, fat is mainly deposited around the abdomen, and McKeigue believes it may be possible to identify those most liable to CHD simply by looking at them.

Since all South Asians in urban environments seem to be at greater risk of CHD than most people, there is clearly a genetic factor involved. McKeigue suggests that over the generations, insulin resistance may have had a selective advantage in hard-working rural communities facing food scarcity. But it is a life-threatening liability for relatively affluent urban communities with a more sedentary lifestyle.

Insulin resistance can be reversed by losing weight and exercising. Much more work is needed to confirm McKeigue's findings, and a comprehensive study looking at CHD and diabetes in at least 6,000 middle-aged men and 1,200 women will take place in Britain and India.





● **Insulin factory:** *pancreatic cells secrete vital hormones.*