

Shall We become vegetarian to minimize the risk of Coronary Heart Disease?

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Cardiovascular disease is the major cause of mortality all over the world, being responsible for about 50% of all adult deaths. The majority of these deaths are from coronary heart disease (CHD). Asian communities residing in the UK have 50% higher mortality from CHD than that of the appropriate national average.¹ In India, prevalence of coronary artery disease has been reported as being 11% in 2001.² However, sizeable populations such as in Pakistan have no published data for prevalence or incidence of coronary artery disease. In Pakistan, prevalence is high for diseases like hypertension (17.9%), diabetes (10%) and hypercholesterolaemia (3.7%) which are precursors of chronic diseases.³ The risk of coronary heart disease in south Asians also seems to be genetically determined is shown by the strong association of CHD with lipoprotein A, which has the highest heritability index of all the lipoproteins.⁴ Genes may also have a role through insulin resistance. The effect of genes on risk of CHD becomes fully apparent when people migrate from south Asia to more affluent environments and acquire western behaviours; their insulin resistance increases, along with the risk of CHD associated with lipoprotein A and LDL cholesterol.⁵

Vegetarian diets are heterogeneous as their effects on nutritional status, health and longevity. It encompasses various animal food avoidance patterns. Several epidemiological studies have proved that vegetarians suffer less from many of the diseases linked to a modern western diet i.e. coronary heart disease, hypertension, obesity, type II diabetes, diet-related cancers, diverticular disease, constipation and gall stones. However there are some studies that prove that the vegetarians, whose diets are monotonous and extremely restricted, are exposed to some dietary deficiency diseases as a result of inadequate intake of certain micronutrients. This is also influenced by other factors such as bioavailability and socioeconomic differences. Studies have shown that vegetarian diets are generally low in Ca, Iron, Vitamin B-12 and Vitamin-D.

On the basis of certain restrictions, vegetarians are classified in following types: a) Vegans who eat food of only plant origin. b) Lacto vegetarians include dairy products in their diet. c) ovovegetarians also include eggs in addition and d) semi vegetarians who eat no red meat but include chicken and fish with their plant food. Vegetarian diets tend to be lower in total fat. Lacto-ovo vegetarians consume an average of 35% of energy as fat, compared to omnivores consuming over 40% of energy as fat.⁶

Many people with cardiovascular disease have elevated or high cholesterol levels.⁷ A study of 27,529 Californian Seventh Day Adventists has shown a definite dose related link between meat consumption and heart disease.⁸ This study provides the best evidence of a possible effect of meat consumption on CHD. The rate of events of CHD in vegetarians and non vegetarians after 20 years of follow up has shown a 50% increase in the risk in those who ate meat. The age adjusted relative risk in meat eaters as compared with the vegetarians was 1.5 (95% CI 1.3-1.7) in men and 1.4 (95% CI 1.2-1.6) in women. Moreover, there was clear evidence of a dose response, in that there was a significant trend of an increasing risk as the consumption increased. A combined data for 76172 men and women from 5 prospective studies to compare the death rates from common diseases of vegetarians with those of non-vegetarians with similar lifestyles showed that the lower mortality from ischaemic heart disease among vegetarians was greater at younger ages and was restricted to those who had followed their current diet for >5 years. Further categorization of diets showed that, in comparison with regular meat eaters, mortality from ischaemic heart disease was 20% lower in occasional meat eaters, 34% lower in people who ate fish but not meat, 34% lower in lactoovovegetarians, and 26% lower in vegans.⁹

Both vegetarians and non-vegetarian health-conscious persons in a German study have reduced mortality compared with the general population. Within the study,

low prevalence of smoking and moderate or high level of physical activity but not strictly vegetarian diet was associated with reduced overall mortality. The insignificant reduction in mortality from ischemic heart diseases in vegetarians compared with health-conscious persons could be explained in part by avoidance of meat intake.¹⁰ A study of British Health Food Shop users, the SMR for CHD was 60 in non vegetarians, but was significantly lower at 43 in vegetarians and was more pronounced in men.¹¹ Findings from the Oxford Vegetarian Study, a 12 year study of 6000 British vegetarians and 5000 meat-eaters found that the incidence of coronary heart disease mortality was 28% lower in vegetarians compared with matched omnivores. However, after adjustment had been made for the differences in body mass index, smoking history and social class, the resulting 25% reduction in death from CHD among non meat eaters as compared with meat eaters was no longer significant.¹² The Coronary Artery Risk Development in Young Adults (CARDIA) Study examined diet in relation to health in over 5,000 young adults aged 18 to 30. Vegetarians were found to have greatly improved cardiovascular fitness and a lower risk of heart disease. A low level of meat consumption was linked to improved general health.¹³

A diet which is high in fruits, vegetables, legumes, whole grains, fish, and poultry is called prudent diet. Those people both men and women who eat mostly a "prudent" diet have a 30% lower risk of heart attacks compared with men who ate the fewest foods in the "prudent" category. By contrast, men who ate the highest percentage of their foods from the "typical American diet" category (high in red meat, processed meat, refined grains, sweets, and desserts) had a 64% increased risk of heart attack, compared to men who ate the fewest foods in that category.^{16,17} The California Lifestyle Heart Trial has indicated that a low fat vegetarian diet together with other lifestyle changes such as exercise and stress management can in fact reverse the progress of heart disease, by reducing cholesterol plaques in coronary arteries.¹⁴

A high intake of carotenoids from dietary sources has been shown to be protective against heart disease in several population-based studies. Recent research has demonstrated the importance of protective antioxidant nutrients in the diet found in fresh fruit and vegetables. These antioxidant nutrients include the beta-carotene form of vitamin A, vitamin C and E. Many researchers now believe that these nutrients play a major role in reducing the risk of chronic diseases such as heart disease and cancer. A high consumption of fresh fruit and vegetables is a benefit of vegetarian diets.^{15,16} A diet high in fruits and vegetables,¹⁷ and possibly fish¹⁸ appears protective against heart disease, while a high intake of saturated fat (found in meat and dairy fat) and

trans fatty acids in margarine and processed foods containing hydrogenated vegetable oils may contribute to heart disease.¹⁹ In a preliminary study, the total number of deaths from cardiovascular disease was significantly lower among men with high fruit consumption than among those with low fruit consumption.²⁰

Low HDL cholesterol (known as the "good" cholesterol) and high LDL cholesterol (known as the "bad" cholesterol) are more specifically linked to cardiovascular disease than is total cholesterol.²¹ The protective effect of a vegetarian diet is believed to be related to the lower blood cholesterol levels seen in vegetarians. Repeated studies have demonstrated that vegetarians have low blood cholesterol levels. Several studies have confirmed that vegetarians especially males have lower levels of LDL Cholesterol and this puts them at lower risk of CHD. Blood lipid levels are lower in vegetarians compared to meat eaters.

Feeding vegetarians beef, which is high in total fat and saturated fatty acids and cholesterol, causes 19 % increases in total plasma cholesterol because of increase in LDL cholesterol whereas HDL cholesterol levels stay constant over a two week period.²³ Feeding lacto vegetarians eggs for 3 weeks, increases dietary cholesterol which in turn increases total and plasma cholesterol.²⁴ Decreasing the amount and altering type of fat in one group of vegetarian's diet further decreases the serum lipid levels.²⁵ Non-vegetarians have decreased total cholesterol and LDL and HDL cholesterol when they are fed vegetarian diets low in total fat, saturated fatty acids, cholesterol, protein, and high polyunsaturated fatty acids, for several months. Decreases are only one-third of those observed in lifelong vegetarians.²⁶ Normolipidemic non-vegetarians fed a low fat, semi-vegetarian diet for three months have decreased total cholesterol, LDL cholesterol, and LDL:HDL ratios whereas HDL levels weights and plasma triglycerides stay constant.²⁷

Scientific research done in the past two decades has shown that vegetarians adopt many healthy lifestyle habits in addition to diet, such as less or no smoking, abstinence or moderation in the use of alcohol. It has been observed that vegetarians are generally more active, as a vegetarian diet confers a wide range of health benefits.

Alongside the growing scientific interest in the role of diet, much of the developed world has seen a rapid increase in the number of people choosing a vegetarian diet, often for ideological belief rather than health promoting reasons. The vegetarian society of U.K estimated from the research carried out at the university of Bradford in 1991 about 3.6 million people in the U.K approx 7% of the population were vegetarians. With an increasing number of vegetarians, and the possibility that such diet protects against

the major cause of death in developed and increasingly in developing countries, the public health implications of vegetarianism are significant.

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