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LETTERS TO THE EDITOR

- *The British Heart Journal welcomes letters commenting on papers that it has published within the past six months.*
- *All letters must be typed with double spacing and signed by all authors.*
- *No letter should be more than 600 words.*
- *In general, no letter should contain more than six references (also typed with double spacing).*

Coronary heart disease in Indians, Pakistanis, and Bangladeshis: aetiology and possibilities for prevention

SIR—I enjoyed McKeigue's editorial[1] and agree that a reduction in the risk of coronary heart disease in South Asians is likely to require different strategies from those recommended for the general population in the United Kingdom. I do not, however, agree that the basis for advising South Asian communities to reduce saturated fat intake on a mass scale so as to lower average plasma cholesterol is open to question. It is possible that nutritional adaptation to dietary intakes varies from race to race as well as from community to community for the same race. It may also vary depending upon the diet and lifestyle factors. It seems that obesity, which is due to increased intake of energy and decreased physical activity,[2] is the most significant consequence of nutritional adaptation. It is beneficial to enhance physical training to decrease obesity and help to prevent coronary disease but exercise may not work unless saturated fat and cholesterol intake are decreased.[3] Similarly, it may be difficult to achieve weight loss unless energy intake as fat is also reduced. Reducing energy intake by decreasing carbohydrate and protein intake may not provide the desired benefit.

Secondly, it seems to be a mistake to compare dietary intakes of South Asian migrants with national average intakes in the United Kingdom because diet and lifestyle changes in Indians are of a more recent origin than in Britons.[4] Whereas native Britons may have adapted to these changes, South Asians may have maladapted because of poor living conditions in childhood followed by affluence.[5]

It seems justifiable to compare the dietary intakes of migrants with those of Indian natives. Apart from slightly higher intake of energy (2140 *v* 2415 kcal), Indian migrants to the United Kingdom also consume significantly more total fat per day (25·6 *v* 38·8% kcal) and less carbohydrate (61·0 *v* 48·6% kcal) than native Indians.[6,7] Perhaps Indians in the United Kingdom also take more refined carbohydrates and processed snacks in between meals than native Indians (table). This would enhance fasting and postprandial hyperinsulinaemia and hyperglycaemia which are both atherogenic.[8] An increased intake of fruits, vegetables, and legumes decreases fasting and postprandial hyperinsulinaemia and hyperglycaemia as well as reducing the intake of foods rich in energy, saturated fat, and cholesterol and provides the soluble dietary fibre and antioxidant vitamins and minerals that are protective against coronary disease.[4,8] Because coronary heart disease is a multifactorial problem,[4] the efficacy of weight loss and physical training alone is likely to be as disappointing as that of cholesterol lowering. I suggest an increased consumption of fruits, vegetables, and legumes in their package of weight loss and physical activity for prevention of coronary disease in South Asians which we have found useful in our patients.[8]

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Nutrient intakes and other characteristics (means) in different adult population groups

Nutrient	*Indian rural middle class (n = 81)*	*Indian urban middle class (n = 81)*	*Indian immigrant to UK*	*British native*
Serum cholesterol (mg/dl)	162·5	188·3	204·8	211·7
Energy (kcal/day)	2250	2140	2415	2210
Total carbohydrates (% kcal/day)	72·0	61·0	48·6	44·9
Refined (% kcal/day)	7·2	13·5	18·0*	20·0*
Total proteins (% kcal/day)	12·8	13·4	12·3	12·9
Total fat (% kcal/day)	15·2	25·6	38·8	42·2
Saturated fat (% kcal/day)	5·1	8·5	13·7	18·5
Polyunsaturated saturated fat ratio	0·66	0·56	0·85	0·28
Cholesterol (mg/day)	76	152	200	405
Dietary fibre (g/day)	33·0	31·0	29·1	17·9
Fruit, vegetable and legume (g/day)	100	200	150*	100*
Body mass index (kg/m²)	19·8	21·8	25·7	25·9
Waist:hip girth ratio	0·88	0·92	0·98	0·94

*Estimated.
This table shows that increased consumption of total fat and cholesterol, refined carbohydrates (sugar, bread, and snacks) and decreased intake of complex carbohydrates and also possibly more total energy and less physical activity may be responsible for higher mean body mass index and waist to hip ratio leading to insulin resistance and hyperlipidaemia which may be the cause of higher prevalence of coronary artery disease in urban Indians and in immigrants to the United Kingdom. It seems that a marginal increase in multiple risk factors is responsible for the more extensive atherosclerosis in Indian urban dwellers and immigrants compared with British natives.

Early and late arrhythmias after the Fontan operation: predisposing factors and clinical consequences

SIR—Cardiac arrhythmias, well recognised as complications of the Fontan operation were carefully investigated by Gewillig *et al* in 104 consecutive patients (*British Heart Journal* 1992;**67**:72–9). Early and late arrhythmias (bradycardia, intermittent sinus *v* junctional rhythms, atrial *v* junctional tachycardias, flutter, runs of extrasystoles, etc) became disturbing complications in this clinical series; it is important to understand possible mechanisms underlying such rhythms and worthwhile to find procedures for avoiding them. Similar arrhythmias complicate the Mustard and Senning operations which also involve incisions into the right atrium. We call attention to an experimental study in which postganglionic innervation of the automatic pacemaker cells within the sinoatrial nodal (SAN) region of the dog heart was interrupted.[1] Specifically, two transmural incisions (one longitudinally along the ventral caval surface from pericardial reflection caudally to the pulmonary vein fat pad and another from the end of this cut transversely across the sulcus terminalis to a point midway across the anterior (ventral) surface of the right atrium) interrupted vagal postganglionic input to the sinoatrial node. The incisions, however, did not interrupt vagal regulation of the conductile system and atrioventricular nodal (AVN) region and did not appreciably influence sympathetic postganglionic nerves to either the SAN or AVN regions.

Recognition of subepicardial and intramural nervous pathways to critically involved target tissues in the heart seem potentially important. Neither Gewillig *et al* nor others[2] take note of such potentially selective or partial denervations of critically involved target tissues by the relatively extensive atrial incisions. While age, atrial size, and mean pulmonary artery pressure may well be important risk factors in these clinical series, we suggest that the precise location of the atrial incisions in relation to the regulatory nerve pathways may also be relevant to improving the outcome of the Fontan (Mustard, Senning) operations. Avoiding transection of such nerve pathways may preserve autonomic balance between the SAN and AVN mechanisms or between the sympathetic and parasympathetic supplies to automatic or conductile tissues or both which are actively involved in modulating every beat of the heart.

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