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Dietary Guidelines For Affluent Indians

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The populations of Europe and North America have now generally attained a level of affluence which permits them full access to the foods they desire; they can, therefore, now satisfy practically all their *wants* with respect to food intake. In India, as in many other developing countries, good proportions of populations are so poor that they cannot satisfy even their basic food *needs* to levels necessary to ward off frank undernutrition. The dominant nutrition-related problems of India, unlike those of Europe and North America, are therefore those attributable to dietary *inadequacy* and not dietary *excess*. Nutritional deficiency diseases, like PEM, vitamin A deficiency, goitre and iron-deficiency anaemia are far more widespread and are, therefore, being perceived as a far greater and more urgent challenge to health/nutrition scientists than chronic degenerative diseases, such as coronary heart disease (CHD). The major nutritional concerns in India are those related to maternal undernutrition, high infant and child mortality, impaired growth and development of children and frank undernutrition. Under the circumstances, the approach to the prescription of dietary guidelines in India has been different from that generally followed in Europe and North America.

Starting with Sweden in 1968, nearly 15 countries of Europe and North America, Australia, and New Zealand have now drawn up dietary guidelines for their populations. The major objective in all these exercises has been to educate the populations to avoid dietary excesses which could render them more

prone to chronic degenerative diseases, especially CHD. The low priority for prescriptions and propagation of dietary guidelines of this nature in India has apparently stemmed from the consideration, referred to above, that our major concern now is to ensure that at least basic energy needs of the majority of our populations are met, and frank nutritional deficiency diseases in them are prevented and controlled, rather than that possible overnutrition and dietary excess in a small minority are corrected.

The Emerging Scenario

However, the emerging scenario in many developing countries will show that this may be a somewhat shortsighted and complacent view. It is now becoming increasingly clear that it may in fact be important for India to develop and promote dietary guidelines for its relatively affluent population groups even at the current stage of its development. While large sections of our people are, no doubt, poor and undernourished, there is a steadily expanding middle and affluent class. India cannot dismiss its affluent minority and problems of overnutrition associated with such affluence, as relatively unimportant. The affluent and middle class are not only a steadily growing minority but they are also the pace-setters, and they include some of the most important, influential and productive elements of the society. As far as India is concerned, a 'minority' of even just five percent of the population still means over 40 million people. It will be wise and prudent for us to benefit

from the experience of developed countries, and through timely action avoid repeating the earlier mistakes of developed countries.

Developed countries had nearly abandoned breast-feeding and had to undertake a massive educational campaign to partially restore this salutary practice. Developed countries had to wait for fat consumption levels in their population groups to reach nearly 40 percent their total caloric intakes before deleterious effects of such excessive intakes were recognised and intensive education programmes were launched to reverse this trend. It is to be hoped that India, where at least some sections of the population are emerging from poverty and are moving up the socio-economic scale, will not have to travel the same road. It is this consideration that should lend urgency to the development and promotion of dietary guidelines for our affluent sections – especially the new rich. Indeed there are disturbing indications that the problem of coronary heart disease among affluent Indians may have already acquired even more serious magnitudes than in populations of some developed countries, possibly because of some dietary peculiarities.

Changes in Dietary Pattern Induced by Development

Piecing together evidence from numerous diet surveys among different population groups, it would appear that emergence from poverty, urban migration, and socio-economic advancement bring about changes not only in lifestyles but also in dietary patterns of populations. The changes in the initial phases of development may be beneficial, resulting in correction of energy deficits and improvement of the nutrient quality of the diets with respect to pro-

teins, vitamins and minerals; but with increasing prosperity, the deleterious repercussions of dietary change could become obvious.

The important dietary changes that take place as Indian populations move up the socio-economic scale appear to be:

- Increased intake of legumes, vegetables, milk (and flesh foods in case of non-vegetarians) – changes which may be considered beneficial from the nutritional point of view.

- Substitution of millets (coarse grains) by the more prestigious cereals – wheat and rice – with a progressive increasing preference for the highly polished varieties of the latter with increasing socio-economic advancement. This is also usually accompanied by reduction in overall cereal intake (though cereal intake by European and North American standards continues to be relatively high even in the most affluent Indian groups).

These changes could result in a significant decrease in the overall fibre content of the diet. According to Sharma (R.D. Sharma, National Institute of Nutrition, personal communication) who has investigated the content and nature of fibre in Indian food stuffs, the fibre content of polished rice is just 2.4 g/100 g and that of refined wheat 3.0 g/100 g as against a fibre content of 20.4 g percent, 18.6 g percent and 14.2 g percent in Bajra (*Pennisetum typhoideum*), Ragi (*Elusine coracana*) and Jowar (*Sorghum vulgare*). It may be computed that the total substitution of millets by polished rice or refined wheat could result in more than 50 percent reduction in the fibre content. Sharma's analysis shows that the fibre content of raw rice (brown) is 5 to 8 g/100 g as against 2.4 g/100 g for polished rice; the fibre content of whole meal wheat (100 percent) is 9.6 g/100 g as against 3.0 g/100 g for refined wheat.

Though there are still some gaps in our knowledge of the precise mode of action of dietary fibres on carbohydrate and lipid metabolism and there are still some questions as to what extent these effects of dietary fibres are direct or indirect, the overall beneficial effects of high fibre diets on glucose metabolism in Type II diabetes, and on lipid, lipoprotein and cholesterol metabolism are now widely recognised. It has been demonstrated that fibrous leguminous vegetables tend to lower blood glucose profiles in diabetics both acutely (Thorne, M.J. *et al. Am. Jour. Clin. Nutrition*, 38.48.1.1983) and long term (Simpson,

H.C.R.: *Lancet*, 1.4 1981. Steep reduction in the level of dietary fibre (especially in the presence of high carbohydrate intakes which tend to lower HDL levels) could be undesirable. However increased intake of legumes in the affluent may, to some extent, compensate for the reduction in fibre intake from the cereal source.

- Progressive increase in the intake of edible fat with increasing preference for hydrogenated fat in place of vegetable oils (in the case of middle classes) and, in the most prosperous segments, relatively high intake of *ghee* (clarified butter). In an earlier issue of this Bulletin (Gopalan, C.; *Bull. NFI*, 9.2. 1988) it was pointed out that while in nearly 17 percent of the rural poor households diets did not include any edible oil, it could be computed that fat intakes in the dietaries of the top-income bracket in the country could well be so high as to provide over 30 percent of the calories in the diet — levels now recognised to be definitely harmful from the point of view of atherosclerosis and CHD.

- Increased intake of sugar and sweets (which the poor can hardly afford): Sugar and high carbohydrate diet low in fibre could also reduce plasma HDL levels – an undesirable change.

- Increase in overall energy intake in relation to energy expenditure – leading to obesity which increases vulnerability to both CHD and diabetes.

Health Consequences of Changing Dietary Patterns

On the basis of all the evidence available from several contemporary studies, it will be reasonable to conclude that the foregoing changes in dietary pattern brought on by affluence are related to (though they may not entirely explain) the progressively worsening picture with respect to coronary heart disease (CHD) and diabetes (Type II) in our affluent population segments.

Coronary heart disease: Gopinath and colleagues (personal communication) found that the prevalence of coronary heart disease in urban Delhi was over six times (7.3 percent) that in its rural environs, and that the victims were largely drawn from the most affluent sections of the population. Studies in Britain (Pedço *et al. Lancet* 2. 833. 1975; Marmot *et al. Stud. Med. Pop.*, No. 47. 1984) had demonstrated that Indian immigrants in Britain had a higher

morbidity and standardised mortality ratio for CHD than the indigenous British population. Jacobson (*Lancet*, 2.656.1987) had attributed the higher morbidity and mortality from CHD of Indian immigrants in Britain to consumption of *ghee*, a clarified butter product which unlike fresh butter was found to contain substantial amounts of cholesterol oxides. Miller *et al (Artherosclerosis*, 70. 63. 1988) found that Indian immigrants had higher plasma glucose after glucose load, than the Europeans; Indians, as compared to Europeans and West Indians, also had relatively low levels of HDL cholesterol and lower proportions of PFA as n-3 fatty acids – biochemical findings indicative of increased susceptibility to coronary heart disease. Perhaps, far-reaching conclusions as to ethnic differences with regard to prevalence of CHD and diabetes should not be drawn from these limited studies especially since the sample sizes in some of them were small. But these observations at least indicate that, unlike in the case of our poor, problems of CHD and diabetes are *at least* as important (if not more) in our affluent populations as (than) they are in the affluent industrialised countries.

Diabetes: Mather and Keen (*Brit. Med. Jour.* 291. 1081. 1985 in a study which involved 34,000 Asians and 27,000 Europeans) had shown that the prevalence of diabetes (Type II) in Indian immigrants in London was 3.8 times that among Europeans where all age-groups were considered; the difference was nearly five-fold when only the 40-50 year age group was considered. The prevalence rate observed among Indian immigrants in London corresponded closely to the prevalence rate observed among affluent Indians in Delhi using the same investigative parameters. (Verma, *et al. Brit. Med. Jour.* 293.423. 1986). A recent study by Ramachandran *et al (Brit. Med. Jour.* to be published in 1988) among a relatively affluent population group in the industrial township of Kudremukh in South India also revealed an incidence of diabetes as high as that observed in Indian migrant populations in Britain. On the other hand, an earlier ICMR study had shown that the prevalence of diabetes among the rural poor was only half that in the urban population (1.1 percent as against 2.2). A study in Singapore (Ac. Thai *et al. Jour. Med. Assn. Thailand* 70.2. 1987) showed that: (1) among

Indians, Malays and Chinese, the prevalence of diabetes was highest among Indians, and (2) the present prevalence rates in all three ethnic groups were decidedly higher than those observed in the same population groups 15 years earlier but differences in prevalence between ethnic groups were of the same order in the surveys at both points of time. These observations provide disturbing indication of increased "genetic" vulnerability to diabetes among Indian population groups and of the additive aggravating effect of affluence thereon. It would appear that with respect to CHD and diabetes, affluence devoid of dietary discipline may pose even greater dangers to Indians than to some other ethnic groups. It is, however, quite possible that differences with respect to prevalence of diabetes and CHD between different ethnic groups are not truly genetic at all, but may in fact be related to differences in the dietary patterns of the concerned population groups. Under the circumstances, the importance of appropriate dietary guidelines for the affluent will be even more obvious.

The Deleterious Role of Excess Dietary Fat

Perhaps the most important food item in relation to the health hazards in the dietaries of the affluent groups that needs consideration is dietary fat. As was pointed out earlier, fat intake in Indian populations is highly skewed with about five percent of the population consuming nearly 40 percent of the available fat (according to some estimates). Apart from the quantity, there is also difference with respect to nature of the fat. Fat consumed by the well-to-do includes high proportions of hydrogenated vegetable fat and *ghee* (clarified butter).

Recent observations by Achaya (*Jour. Sc. Ind. Res.*; 46, 112, 1987) have placed the entire picture of fat requirements and fat intakes in Indian dietaries in an entirely new perspective. Achaya has shown that practically every food item in the Indian dietary including cereals contains some fat – as "invisible fat". He computes that the invisible fat intake even in poor Indian dietaries ranges from 20 g to 50 g daily. He has also shown that dietary linoleic acid derived from invisible fat contributes an average of 4.8 percent to seven percent dietary calories – a figure which exceeds three

en percent level for linoleic acid recommended by the FAO/WHO in 1977. The latter body had made no recommendation with respect to desirable level of intake of linolenic acid but Achaya considers that the level of 0.28 en percent of linolenic acid provided by invisible fat in Indian dietaries should be adequate, basing his conclusion on the finding of Ghafoorunissa, at the National Institute of Nutrition that at this level of intake there was no biochemical evidence of EFA deficiency. According to his calculations, 350 g of rice yielding 1,200 calories will furnish four en percent of linoleic acid and 0.24 en percent linolenic acid.

The 1981 RDI recommendations of ICMR had acknowledged that invisible fats in Indian dietaries already contribute 9-10 en percent. More recent calculations indicate that invisible fats in Indian dietaries may be contributing as much as 15 percent energy. Under the circumstances, it is argued that in order to have a level of fat in the diet which would provide 20 percent of total energy, the additional visible fat that will be needed (to provide the additionally needed five percent energy) would be no more than 13 to 14 g.

The point that is being made is that even poor Indian diets are reasonably adequate in fat; and that intakes of edible fat of the order observed among affluent sections are wholly unnecessary and possibly hazardous.

A further important point that emerges from Achaya's analysis is that average Indian dietaries are not only generally adequate in fat but that food items like cereals which form the staple have, as it were, a built-in invisible fat composition which practically ensures that the needs of essential fatty acids are also fully met. The fashion among some affluent sections to discard the conventional oils like groundnut oil and to go in for safflower oil and sunflower oil because of their reported superiority arising from their high content of PFA (poly-unsaturated fatty acids) may be somewhat misplaced. The deleterious effects of unnecessarily high intakes of linoleic acid and the distortion that this could induce in the ratio of n-3 (derived from linolenic acid) to n-6 fatty acids (derived from linoleic acid) are now being recognised. Excess linoleic acid could lower HDL cholesterol – not desirable from the point of view of susceptibility to coronary heart disease; and is also suspected to lead to other deleterious

effects such as development of certain types of tumours and suppression of the immune response. Safflower oil and sunflower oil contain close to 70 percent of linoleic acid (as against 30 percent in groundnut oil and 40 percent in sesame oil). In cereal-based diets, if overall fat intake is moderate and saturated fat intake is not excessive, these oils are unlikely to confer any special advantage. The important consideration, however, is that the overall intake of fat should be restricted to levels which will provide less than 20% of the total calories.

The relative freedom from CHD of Eskimos, despite a high fat intake, has been attributed to the protective effect of fish oils which are rich sources of n-3 fatty acids, credited with the properties of increasing bleeding time and decreasing blood viscosity, lowering blood pressure and inhibiting platelet aggregation. As was pointed out earlier, Achaya considers that the 0.28 en percent derived from linolenic acid (a source of n-3 fatty acids) present in the 'invisible fat' of cereal-based diets is adequate. Indians (especially vegetarians who cannot obtain their n-3 fatty acids from fish oils) can still derive additional linolenic acid and n-3 fatty acid derivatives from green leafy vegetables.

Concluding Comments

In a country like India where abject poverty associated with dietary inadequacy and frank undernutrition exists side by side with extreme affluence reflected in conspicuous consumption and overnutrition, nutrition scientists face a double challenge, of undernutrition at one end of the socio-economic spectrum and overnutrition at the other end. Dietary guidelines appropriate for the former will be ridiculously inappropriate for the latter.

On the basis of the considerations discussed above, dietary discipline for the affluent may have to be based on the following principles:

- Overall energy intake should be restricted to levels commensurate with the sedentary occupations of the affluent, so that obesity is avoided.
- Highly refined and polished cereals could be avoided in preference to undermilled cereals.
- Green leafy vegetables (a source of not only carotene but of linolenic acid derivatives) should be included at least in levels recommended by ICMR.