



## Editorial

### It's time we turn our attention to quality of food as well

The last few decades have not witnessed much change in the dietary pattern in India except for marginal increase in fat intake. As per recommendation of the National Institute of Nutrition (Indian Council of Medical Research), Hyderabad, India, an individual is advised to consume food from at least 9 to 10 food groups per day to achieve diet with adequate micronutrients and quality protein and fat<sup>1</sup>. Dietary diversity ensures adequacy of essential amino acids, fatty acids and micronutrient for optimal physical and mental health. Recently, the United Nations-Food and Agriculture Organization (UN-FAO) panel has reported that poor quality diet (lack of dietary diversity) is a greater threat to health than infectious diseases such as tuberculosis, malaria and measles, and eating nutrient-rich foods would result in savings of resources used in industrial food fortification<sup>2</sup>.

Fruits and vegetables (FV) being rich sources of antioxidants, fibre and other micronutrients should make a generous portion of an individual's diet. However, majority of the people consume far lesser than the daily recommended level of FV and milk in India<sup>3</sup>. Dietary intakes of children and adults in rural and urban areas show gross inadequacy of all nutrients and poor quality of protein<sup>3,4</sup>. As per the National Sample Survey Office (NSSO) data<sup>5</sup>, the average per capita household consumption of FV is only 15 and 145g, respectively, for rural India and 29 and 155g for urban India (g/day/person)<sup>3</sup>. The global data reported by Micha *et al*<sup>6,7</sup> and National Nutrition Monitoring Bureau (NNMB)<sup>3,4</sup> also showed poor picture for India with respect to FV intake. Further, the intake should comprise a variety of vegetables and fruits such as green leafy vegetables, seasonal FV, roots and tubers.

With respect to fat consumption, recent reports have indicated trans fatty acid (TFA) consumption to be exceeding the recommendation, and omega 6 (n6) being the major source for polyunsaturated fatty acids

(PUFA) with negligible omega-3 intake. Furthermore, with the advent of varieties of commercial oils, the intake of n6 is increasing alarmingly with an inappropriate PUFA (omega-3 vs. omega-6) balance<sup>8,9</sup>.

Another major issue faced by the country is high salt intake, which is a direct risk factor associated with hypertension. Predictably, the non-communicable diseases (NCDs) such as type 2 diabetes, coronary heart diseases and stroke and the associated risk factors are increasing in epidemic proportions across India<sup>3,4</sup>. The India State-level disease burden study indicated an estimated 36 per cent reduction in disability adjusted life years (DALYs) in India, from 1990 to 2016, suggesting an overall decrease in disease burden due to infectious diseases and maternal and neonatal and nutritional disorders, with a corresponding increase in DALYs due to NCDs<sup>10</sup>. The urban data from NIN and National Family Health Survey (NFHS-4)<sup>11</sup> also show high proportion of population with NCD risk factors such as hypertension, high blood glucose and abnormal lipid profile across rural and urban India. Moreover, obesity and overweight are increasing both in rural and urban India<sup>3,4</sup>. While in urban India, 44 per cent women and 34 per cent men are overweight/obese, among the rural counterparts, 15 per cent women and 14 per cent men are overweight/obese<sup>3,4</sup>. More importantly, even among the thin people, the liver accumulates fat tissue and gradually the viscera and other internal organs get surrounded by fat tissue (thin-fat), which is unique to our population and poses a greater risk for NCDs than obesity itself<sup>12</sup>.

It may be mentioned here that 80 per cent of NCDs can be prevented by right kind of diet with adequate intake of FV and milk/curd, and appropriate physical activity<sup>13,14</sup>. In a recent reports on estimates, the age-standardized prevalence of cardiovascular diseases (CVD) (ischaemic heart disease and stroke) increased between 1990 and 2016 even in low

developed States<sup>15</sup>. Of the risk dynamics, unhealthy diet tops as the leading risk factor for CVD contributing to 56.4 per cent of DALYs, while air pollution and tobacco use contribute to 31.1 and 18.9 per cent, respectively, in 2016<sup>10</sup>. Moreover, of the deaths, 53.4 per cent due to CVD were among people younger than 70 years<sup>10</sup>. Thus, a large number of productive years are lost in India due to unhealthy diets. It is time we turn our attention on quality rather than quantity of food. The low socio-economic (LSE) people in India are subsisting on micronutrient-poor, high-salt diet, while the high socio-economic (HSE) group in contrast consumes high-fat but micronutrient-poor diets. Thus, different sections of population (LSE and HSE) from both urban and rural areas across India are at risk of NCDs, with an early onset and increased mortality from CVD compared to the other parts of the world<sup>3,4</sup>. The escalating NCDs, persistent anaemia and high level of stunting can all be related to impaired access to healthy diets<sup>2,13,14</sup>.

Micronutrient deficiencies due to poor intake of FV are central to the resilient problems of stunting and anaemia and also for the increasing risk of NCDs. Inflammation and insulin resistance increase with micronutrient-deficient diets and pave way for the genesis of NCDs such as diabetes and CVD<sup>2,12-14</sup>. Micronutrients are also critical for linear growth and prevention of stunting and anaemia<sup>16</sup>. Lack of micronutrients in the diet can affect linear growth and haemoglobin formation both directly by affecting metabolic pathways or indirectly through induction of inflammation. In addition, lack of FV in the diet can also affect cognition, learning ability and memory<sup>16</sup>. To be more precise, the micronutrients and phytochemicals present in FV affect several metabolic pathways and also keep the inflammation under control. The phytochemicals from FV are metabolized to polyphenols and phenolic acids, which are anti-inflammatory, antioxidative, anti-ageing and cancer preventive. Furthermore, FV cannot be substituted with juices or supplements as there are hundreds of unknown bioactive compounds that may aid in good health. The WHO and also ICMR-NIN recommend a daily intake of at least 400 g of FV excluding potatoes and other starchy tubers to prevent diet-related chronic diseases and micronutrient deficiencies<sup>1,16</sup>.

Ideally, 8-10 per cent of total calorie per day should come from locally available seasonal FV, and another 8-10 per cent from nuts and seeds such as sesame, peanuts, almonds, cashew nuts and walnuts for good

health. Milk/curd should contribute to another 10 per cent of total calorie intake. Thus, 30 per cent of total calorie intake per day should come from FV, nuts and seeds and milk/curd. As for visible fats, the calorie can go up to 15 per cent of total calorie with not more than 25-30 g oils/fats per day for adults<sup>1</sup>. To maintain appropriate balance of omega-6 and omega-3, a variety of oils, especially oils from nuts, seeds and fruits, should be consumed (on rotation)<sup>9</sup>. Milk, eggs or flesh foods are good sources of quality protein; alternatively, pulses, beans and legumes in combination with cereals are good sources of essential amino acids and therefore, good quality protein. Sugar intake can be curtailed or should not exceed 10 per cent of total calorie intake, and processed foods and bakery items should be kept to minimum, which are likely to increase sugar, salt and TFA intakes.

‘Food security’ as defined by FAO is a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life<sup>17</sup>. While India has improved its food security over the years in terms of availability of food, more efforts are required with respect to accessibility and utilization of food. The country needs to shift its focus from food security to nutrition security, a situation that exists when secure access to an appropriately nutritious diet is coupled with a sanitary environment and adequate health services and care, in order to ensure a healthy and active life for all household members<sup>17</sup>.

**Conflicts of Interest:** None.

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