



Vegetables: The Treasure of Nutrition

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Currently, the majority of developing nations are worried with ways to combat hunger and malnutrition. As a result, food and nutritional security have risen to the top of the priority list in national development plans. Hunger and malnutrition have become a serious problem in poor nations and a worldwide moral duty.

Malnutrition affects roughly 53% of children in India between the ages of one and four years. Asia is home to 79 percent of the world's malnourished youngsters. In India, the three anthropometric parameters which are underweight, wasting, and stunting are due to protein energy malnutrition among children under the age of five. Wasted (17%), stunted (63%) and underweight children are among those who are malnourished (50 %). In addition, India has a high rate of low birth weight (LBW) (33 %). Low birth weight in children has been linked to an increased risk of coronary artery disease in adults. India has one of the highest infant mortality rates in the world, at over 70 per thousand births.

Present and Future Constraints

According to estimates, the world's population will reach 8 billion by 2020, with India accounting for 1.2 billion. Around 80% of the world's population (6 billion) will be in underdeveloped countries, with 2 billion individuals suffering from malnutrition. As a result, food and nutritional security have risen to the top of the priority list in national development plans. Hunger and malnutrition have become a serious problem in poor nations and a worldwide moral duty. Malnutrition affects roughly 53% of children in India between the ages of one and four years. Indian Council of Medical Research (ICMR) recommended dietary consumption for adult males includes cereals (475g), pulses (80g), green leafy vegetables (125g), other vegetables (75g), roots and tubers (100g) and fruits (120g).

Nutritional Requirement and Vegetable Consumption

The Indian Council of Medical Research (ICMR) recommended dietary allowances (RDA) per capita per day for adult males includes cereals (475g), green leafy vegetables (125g), pulses (80g), other vegetables (75g), roots and tubers (100g) and fruits (120g). For the female adults the same amount of vegetables, roots and tubers and fruits is recommended as for the adult male but less quantities of cereals (350g) and pulses (70g) is suggested.

The nutritional needs of humans vary depending on their gender, age, weight, height, and level of physical activity. Protein, carbohydrate, fats, minerals, necessary amino acids, and vitamins should all be included in a well-balanced diet to provide sufficient energy (calories). These nutrients, notably vitamins and minerals, are abundant in vegetables.

Vitamins

Vitamin A (Carotene)

Although vegetables lack vitamin A, they do contain carotenoids, which include the active element carotene, principally beta-carotene, a precursor to vitamin A that is known as pro-vitamin A. Vitamin A cannot be synthesised by the human body, hence it must be obtained from diet. Several leafy green vegetables, including amaranth, rumex, palak, curry leaves, drumstick leaves, and fenugreek leaves, Malabar spinach (Basella) and radish leaves contains high Carotene levels in range from 1920 to 7440 micrograms. Carotene is abundant in orange and yellow foods such as carrots, muskmelon, pumpkin, and tomato etc.

Vitamin C

It's an antisorbic vitamin that helps with wound healing, immune response, and allergic response in our body. Some malignancies are protected by beta-carotene, vitamin C, and vitamin E. It's also an antioxidant that aids iron absorption in the body. Vitamin C is found in cruciferous vegetables such as cauliflower, cabbage, broccoli, and brussels sprouts, as well as, potatoes, beans, sweet peppers, tomatoes and green vegetables.

Vitamin B₂ complex

✓ Vitamin B6:

It's a coenzyme that helps in amino acid synthesis and breakdown, conversion of tryptophan to niacin and fatty acid synthesis. Vitamin B6 is present in ample amount in vegetables.

✓ Riboflavin:

The deficiency of riboflavin causes redness and burning sensation of eyes, tongue sourness, scaliness of skin and scrotal dermatitis. Leafy vegetables including amaranth, palak, curry leaves, fenugreek leaves, portulaca, radish leaves, spinach, and turnip greens are high in riboflavin.

Vitamin E

It acts as an antioxidant at the cellular level, preventing polyunsaturated fatty acids from becoming pre-oxidized. It lowers the risk of heart attack and, when combined with vitamins C and A, prevents the formation of cataracts in the eyes. Vitamin E also helps to inhibit the progression of Alzheimer's disease in its early stages. Vitamin E is abundant in parsnip, spinach, broccoli, and watercress.

Calories

Vegetables are not good suppliers of energy in the human diet when compared to other crops such as grains, pulses, and animal products. Carbohydrates and lipids are the primary sources of energy. Cowpea, hyacinth bean, French bean, scarlet runner bean, and peas, for example, are high in calories.

Proteins

Proteins in the human diet are used to produce tissues, muscles, and blood. Enzymes and antibodies are both proteins in the human body. Protein-rich foods include dried beans and peas, as well as leafy green vegetables. Leguminous vegetables have a protein level ranging from 24 to 43 g, whereas leafy greens have a protein content ranging from 3 to 6.7 g.

Phytonutrients

The phytonutrients, also known as, phytochemicals, found in some plants have protective and disease - preventing functions. These are grouped on the basis of their protective functions and physical and chemical characteristics.

Carotenoids or beta-carotene

Greens, preferably dark green leafy vegetables (amaranths, palak, curry leaves, drumstick leaves, radish leaves, fenugreek leaves and others) and orange-or yellow-coloured vegetables (carrot, tomato, pumpkin, melons) have high beta-carotene content. These vegetables containing beta-carotene act as antioxidants and provide protection against coronary heart diseases, like atherosclerosis, thrombotic strokes and myocardial infarction.

Minerals

Human body requires certain minerals, like calcium, phosphorus, iron, potassium and magnesium. Calcium is useful for bones and teeth, especially in children and women during pregnancy and lactation. Calcium from green vegetables, like mustard leaves, kale and broccoli reduces the risk of colon cancer. Calcium, potassium and magnesium in vegetables help to prevent high blood pressure. Leafy vegetables, beans peas, root vegetables, crucifers and tomato are the best sources of these minerals. Phosphorus is helpful in utilization of calcium and assimilation of carbohydrates and fats in human body. The requirement of iron in the body can be met by consumption of about 50g of leafy vegetables in daily diet. It is useful in prevention of anemia, especially in pregnant women. In India, 87.5 per cent of pregnant women and 56 per cent of pre- school age children suffer from anemia. Iron rich leafy vegetables include amaranth, fenugreek leaves, radish leaves, drumstick leaves and palak.

Iodine Deficiency Disorders (IDD)

The major iodine deficiency disorder is a goiter. About 2.3-65% school age children suffer from goiter. In India, about 70 % households consume iodized salt which prevents goiter.

Fibre

Dietary fibre (cellulose, non-starch polysaccharides and lignin), though not a phytonutrient is also an essential requirement for good health. It improves the digestive system, lowers cholesterol and protects against certain types of cancer including bowel cancer. Vegetables are the best sources of dietary fibre. Beans that are rich in fibre have a digestive by-product which reduces cholesterol production in the liver.

Colour-coded diet According to Dr. David Heber of the USA, colour is the key to good nutrition and he advocates colour-coded plan of using vegetables and fruits in human diet. The red/purple vegetables, like brinjal, red cabbage, red sweet pepper, red Asiatic carrot, amaranth and beet root containing anthocyanins are antioxidants and prevent heart disease and stroke by inhibiting clot formation. The fresh red tomatoes and ketewchup and sauces of tomato having lycopene are antioxidants and cancer-fighting. The red watermelon is also useful. The orange-coloured carrot, pumpkin and sweet potato contain beta carotene which is helpful to eyes and skin health and prevents certain cancers.