



## Diet and Cancer in Goa: A Growing Concern

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Cancer incidence in India and in Goa is steadily increasing. In India, there are approximately 1.56 million new cancer cases per year, while Goa reports around 1700 new cases annually. The lifetime risk of developing cancer in India is about 11 percent, meaning one out of nine individuals is at risk.

Health authorities must focus on preventive strategies, screening, early detection and health education programmes to combat this silent killer. Cancer risk factors are broadly divided into genetic factors, which account for about 10 percent, and environmental factors, which contribute nearly 90 percent. Among environmental causes, tobacco, alcohol, diet, pollution, plastics, chemicals, radiations and insecticides play a significant role.

Diet varies widely across countries and regions, and Goa is no exception. The population follows diverse food habits influenced by culture and tradition. Diet plays an important role in the causation of cancers such as colorectal, prostate and breast cancer. Obesity is another important contributing factor.

Certain foods contain exogenous carcinogens or cancer-causing substances. Nitrates and nitrites present in preservatives, additives, artificial sweeteners and pesticides can convert into nitrosamines and nitrosamides, which are linked to stomach cancer when consumed over long periods. These compounds are also found in smoked meat, smoked fish and barbecued foods.

Aflatoxin, a toxin found in improperly stored grains, can lead to liver cell cancer when consumed over time. High fat diets are associated with colorectal cancer, as increased bile acids in the gut may be converted into carcinogenic substances.

Low intake of fruits and vegetables leads to reduced fibre and bulk in the diet, increasing the transit time of food in the gut. This allows carcinogens prolonged contact with the lining of the colon, promoting the neoplastic process. A healthy diet for preventing colon cancer should therefore be low in fat and rich in fibre from fruits and vegetables. Fibre helps bind carcinogens and reduces their contact with the intestinal lining.

Vitamins such as C and E, beta carotenoids and selenium have antioxidant properties that protect cells from cancer. Retinoids are beneficial, and vitamin D plays a protective role against cancers of the colon, prostate and breast.

Obesity increases the risk of several cancers. In males, these include cancers of the oesophagus, thyroid, colon and kidney. In females, obesity is associated with cancers of the oesophagus, endometrium, kidney, gall bladder and breast. Obese individuals have higher insulin levels and increased production of insulin-like growth factors, leading to increased cell multiplication. There is also increased synthesis of oestrogen.

In parts of Goa, pork and beef are consumed frequently. Red meats such as pork, beef and mutton are associated with increased cancer risk. Therefore, dietary modification is essential.

An ideal diet to reduce cancer risk should include fruits, seasonal vegetables such as cabbage, broccoli and cauliflower, citrus fruits like oranges and lemons, garlic and onion, curcumin from turmeric, flaxseed, seeds, nuts, lentils, legumes and small fish. Poultry may be consumed, but broiler chicken exposed to hormones should be avoided. Intake of oils should be limited. Fermented foods and parboiled rice are beneficial.

Foods to be avoided include red meats, processed meats, processed and refined foods, aerated drinks, sugary beverages, desserts, foods high in saturated fats, pickles and papads.

These dietary measures must be supported by regular exercise, physical activity such as walking, adequate hydration, proper sleep, relaxation and good oral hygiene, including brushing and flossing.

With the rising cancer burden, it is the responsibility of government bodies, non-government organisations, municipalities, panchayats, social groups, industries and families to educate the public about cancer prevention, early detection, screening and warning signs.

Cancer management involves physical, social, economic and psychological challenges affecting patients, families and society. Prevention remains the most effective strategy, and healthy lifestyle practices along with proper nutrition are essential in reducing cancer risk.

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