

## **Diet and physical activity's impact**

Dietary factors are estimated to account for approximately 30% of cancers, making unhealthy diet second only to tobacco as a preventable cause of cancer. Obesity is a killer. This proportion is thought to be about 20% in developing countries and is projected to grow. As developing countries become urbanized, patterns of cancer, particularly those most strongly associated with diet and physical activity, tend to shift towards the patterns of economically developed countries. Cancer rates also change as populations move between countries and adopt different dietary patterns.

The relative importance of cancers as a cause of death is increasing. The incidence of lung cancer and cancers of the colon and rectum, breast and prostate, generally increases in parallel with economic development, as stomach cancer declines. Cancer is also strongly associated with social and economic status. Cancer risk factors are highest in groups with the least education. In addition, patients in the lower socioeconomic classes have consistently poorer survival rates than those in higher strata.

In recent years, substantial evidence has pointed to the link from overweight and obesity, to many types of cancer such as esophagus, colorectal, breast, endometrium and kidney. The composition of the diet is also important since fruit and vegetables may have a protective effect by decreasing the risk for some cancer types such as oral, esophageal, gastric and colorectal cancer.

High intake of preserved meat or red meat might be associated with increased risk of colorectal cancer. Another aspect of diet clearly related to cancer risk is the high consumption of alcoholic beverages, which convincingly increases the risk of the oral cavity, pharynx, larynx, oesophagus, liver and breast cancers. Regular physical activity has also been seen to have a protective effect in reducing the risk of breast and colorectal cancer.

## **What can be done?**

The wealth of knowledge that already exists about cancer risk factors provides obvious and ample scope for action to reduce the cancer burden of all countries. After tobacco, overweight and obesity seems to be the most important avoidable cause of cancer.

Given that poor nutrition, physical inactivity, obesity, tobacco and alcohol, are risk factors common to other chronic diseases, such as Cardio-vascular Disease (CVD), type 2 diabetes, and respiratory diseases, conducting a cancer prevention programme within the context of an integrated chronic disease prevention programme would be an effective national strategy.

Dietary factors that convincingly increase risk are:

- Overweight and obesity,
- Excess alcohol consumption (more than 2 units a day)
- Some forms of salting and fermenting fish
- Very hot (thermally) salty drinks and food
- Aflatoxins (fungal contaminants sometimes found on foods such as grains, peanuts, tree nuts, and cottonseed meal)

| EVIDENCE                      | DECREASED RISK  | INCREASED RISK   |
|-------------------------------|---|--|
| <b>Convincing</b>             | Physical activity (colon, breast)   | Overweight and obesity (esophagus, colorectal, breast, endometrium, kidney)  |
| <b>Probable</b>               | Fruit and vegetables (oral cavity, stomach, colorectum).  | Preserved meat (colorectal) esophagus. Salt-preserved foods and salt (stomach). Very hot (thermally) drinks & food (oral cavity, pharynx, esophagus) |
| <b>Possible/ insufficient</b> | Fibre, Soya, fish, n-3 fatty acids, carotenoids, vitamins B2, B6, folate B2, B6, folate, B12, C,D, E, calcium, zinc, selenium, non-nutrient plant constituents, (eg alliums, lignin's, compounds, flavnoids, isoflavones) | Animal fats, heterocyclic amines, polycyclic aromatic hydrocarbons, nitrosamines   |

### Conquering Cancer With Food

The fight against Cancer can begin in our kitchen. Oncologists and researchers have accepted the role that "right" food can play, not only in regressing the advance of cancer but also prevent it from occurring. The best diet is one with lots of salads, vegetables, fruits, sprouts and nuts.

While diet alone cannot reverse the course of cancerous cells, it can deprive the tumours of essentials. Carrots, grapes and Soya beans have cox2 compounds, which hinder the growth of new blood vessels in tumours, which are vital for tumour growth to progress. Fruits and vegetables are rich in anti-oxidants, which clean up free radicals (oxygen molecules generated by human activity which move around in the cells, stealing electrons from other molecules and triggering a tit-for-tat reaction which can damage DNA).

Dietary changes can also lower the risk for specific cancers. Up to 50% breast Cancers, 33% lung cancers and 75% colon and rectal cancers can be avoided following specific diet patterns

A tumour goes through 3 stages and food can play a beneficiary role in all stages:

**1-INITIATION**-An external or internal carcinogen induces changes in the genetic make-up of the cell. This creates lesions, which gives cells the potential for tumorous growth.

**Role of food:** Diets rich in vegetables and fruits, and the intake of food rich in bioactive compounds, trigger detoxification enzymes which in turn reduce the DNA to carcinogens.

Alliums such as onion and garlic have anti- carcinogenic mechanisms.

Cruciferous vegetables like cabbage, broccoli, Brussels Sprouts and cauliflower have dithiolthiones, which inhibit enzymes that activate cancer.

**2.PROMOTION**-At this stage the prolific cells transform into a discernible group.

**Role of food:** The energy balance must be maintained, as it will thwart the expansion of abnormal cells. Selenium and

vitamin D have shown a protective effect against tumours. Selenium is found in cereals, fish, liver and seafood. It has antioxidant capacity and helps in preventing tissue damage. Vitamin D is present in milk, yogurt, curd, small fish (when eaten with bones like sardines) and egg yolk.

**3. PROGRESSION**-The local lesion transforms into an invasive tumour mass. Metastasis leads to tumour cells migration to distant sites in the body.

**Role of food:** Foliates in green leafy vegetables and whole grain cereals may help reduce damage to DNA. Fruits and vegetables have carotenoids (pigments) that have anti-oxidant properties.

Beta-carotene is found in abundance in spinach, carrots, sweet potatoes and mangoes. Apples have caffeic acid, which increases the production of enzymes that make carcinogens more soluble in water and ultimately eject them from the body. Grapes, oranges are scavengers of carcinogens. Tomatoes – the lycopene neutralizes carcinogens. 10 servings a week may help reduce risk of prostate cancer by half

The role of high fat diets in cancers of colon, rectum, bowel, liver

### **Transfats? What are they? Why are they dangerous?**

Keeping in mind evidence from the past as well as latest scientific knowledge, current wisdom dictates the following criteria for identifying healthy cooking oil.

- Total fat intake should be between 20 – 35% of total calorie intake
- The saturated fatty acids (SFA) content should be low, not exceeding 8-10% of calorie derived from fat
- The remaining calories (20%) should come from poly-unsaturated fatty acids (Omega 3, Omega 6) and Monounsaturated acids (Omega 9).
- Commercially produced Transfats should be avoided. Some naturally occurring fats in milk & meat is acceptable.

It is not easy to single out any one oil that meets all dietary criteria. Olive oil, for instance, has the highest content of MUFA, but has no Omega. Soy & Mustard oils are high in Omega 3. Therefore, taking all factors into account oils that emerge as good options are olive, mustard, peanut, sesame, rice bran & soy. Desi-ghee & butter are no longer a “no-no” provided it is consumed in limited quantities, and not used as the primary source of fat in diet. Blending 2-3 oils could be a good way to fulfill the requirement of varied fats.

The method of extraction matters too. Cold pressed oils like coconut/mustard or sesame (til) are considered most healthy. Oil is heated to very high temperature to get rid of natural smell, and can then be mixed without offending nostrils. The end product is what we call Refined Oil. Transfats are produced during this heating process, become a natural preservative of oil. Once the oil industry discovered that shelf life of oil could be prolonged with introduction of Transfats, they have begun to introduce commercial Transfats into oil. At present, there is no law/guideline regarding percentage of these fats. Thus, we are consuming Transfats unwittingly under the garb of refined oils.

Transfats are the preferred fat used by Bakers and Mithaiwalas. It is heavier than other oils, and has a preservative quality.

### Role of Fibre in a healthy diet – not just roughage from cereal, but from green veg.:

Scientists have confirmed what has been a long held belief: vegetarian diet may help protect against cancer. Analysis of data from over 50,000 men & women by British researchers have shown that those who do not eat meat had significantly fewer cancers overall than those who did. But, surprisingly, experts found a higher rate of colorectal cancers – a disease linked with eating red meat – among vegetarians. Vegetarians were showing significantly higher incidence of colorectal cancers than either meat or fish eaters. They believe the findings need looking into.

It is widely accepted that a diet comprising 5 servings of vegetables & fruits reduces risk of cancer, there have been few studies looking specifically at vegetarian diet.