

# **National Cancer Control Program**

## **Introduction**

Recent times have seen an increase in the incidence of cancer. This is mainly attributed to urbanization, industrialization, lifestyle changes, population growth and increased life span (in turn leading to an increase in the elderly population). In India, the life expectancy at birth has steadily risen from 45 years in 1971 to 62 years in 1991, indicating a shift in the demographic profile. It is estimated that life expectancy of the Indian population will increase to 70 years by 2021–25. This has caused a paradigm shift in the disease pattern from communicable diseases to non-communicable diseases like cancer, diabetes and hypertension.

Among men, lung, esophagus, stomach, oral and pharyngeal cancers are more prevalent, while in women; cancers of cervix and breast are most common, followed by those of stomach and esophagus.

## **Magnitude of Problem**

### **World:**

Cancer in all forms causes about 12% of deaths throughout the world. In the developed countries cancer is the second leading cause of death next to only cardiovascular diseases, accounting for 21% of deaths. In the developing countries, cancer ranks third as the cause of death and accounts for 9.5% of all deaths.

### **India:**

Cancer prevalence in India is estimated to be around 2.0 to 2.5 million, with over 7-9 lakh new cases being detected every year due to this disease. More than 70% of the cases report for diagnostic and treatment services in the advanced stages of the disease, which has led to a poor survival and high mortality rate

## Punjab

A survey was conducted by the Health Department in June 2005 in 4 districts of Muktsar, Bathinda, Faridkot and Mansa to know the number of cancer patients in these districts. The results of the survey are:-

S. No.	District	Population	No. of cancer patients	No. of cancer patients per lakh population
1	Muktsar	8,27,906	453	54.7
2	Bathinda	12,00,736	711	59.2
3	Faridkot	5,85,500	164	28.0
4	Mansa	7,31,535	420	57.4

### Crude Incidence Rate (2002)

Ropar: 33.68/1, 00,000 population

Patiala: 33.56/1, 00,000 population

Bathinda: 35.26/1, 00,000 population

Mukatsar: 24.21/1, 00,000 population

Faridkot: 25.67/1, 00,000 population

Source: Atlas of Cancer

According to ICMR report 2002 the number of cancer cases from districts is as follows:-

District	Cancer Cases
Bathinda	424
Faridkot	163
Mukatsar	221
Patiala	641
Ropar	381

Leading sites of Cancer in 3 districts Ropar, Patiala and Bathinda of Punjab as per report of NCRP (2002) are given in the tables below:

<b>Leading sites of Cancer in District Bathinda</b>				
<b>S.No.</b>	<b>Male</b>		<b>Female</b>	
	<b>Leading site</b>	<b>Number</b>	<b>Leading site</b>	<b>Number</b>
1.	Oesophagus	28	Breast	68
2.	Mouth	10	Cervix Uteri	60
3.	Tongue	9	Ovary	13
4.	Prostate	8	Myel. Leuk.	11
5.	Myel. Leuk	8	Oesophagus	10
6.	Lymph. Leuk	8	Gallbladder (	7
7.	Conn. Tissue	7	Hypopharynx	4
8.	Bladder	7	Tongue	4
9.	Rectum	6	Oth. Skin	4
10.	Oth. Skin	6	Conn. Tissue	4
<b>Total</b>		<b>183</b>	<b>Total</b>	<b>241</b>

<b>Leading sites of Cancer in District Ropar</b>				
<b>S.No.</b>	<b>Male</b>		<b>Female</b>	
	<b>Leading site</b>	<b>Number</b>	<b>Leading site</b>	<b>Number</b>
1.	Larynx	16	Breast	48
2.	NHL	14	Cervix Uteri	42
3.	Bladder	11	Ovary	12
4.	Oesophagus	10	Oesophagus	11
5.	Mouth	9	Mouth	7
6.	Hypopharynx	7	Conn. Tissue	6
7.	Brain, NS	6	NHL	6
8.	Lung	6	Corpus Uteri	4
9.	Prostate	6	Uterus Uns.	4
10.	Tongue	5	Lung	4
<b>Total</b>		<b>166</b>	<b>Total</b>	<b>215</b>

Leading sites of Cancer in District Patiala				
S.No.	Male		Female	
	Leading site	Number	Leading site	Number
1.	Larynx	34	Breast	75
2.	Oesophagus	33	Cervix Uteri	54
3.	Prostate	26	Oesophagus	23
4.	Bladder	23	Ovary	16
5.	NHL	20	Gallbladder	10
6.	Tongue	19	Corpus Uteri	8
7.	Tonsil	12	Bladder	7
8.	Oth. Skin	10	Hypopharynx	7
9.	Lung	10	Vagina	7
10.	Hypopharynx	8	Colon	6
<b>Total</b>		<b>337</b>	<b>Total</b>	<b>304</b>

### PGI study:

An epidemiological study of cancer cases reported from villages of Talwandi Sabo block of district Bathinda of Punjab revealed prevalence of histologically confirmed cancer cases as 125.4 per 1,00,000 population. The study has also shown that there were 51 deaths per lakh population in the study block. The common sites of cancer reported are breast, uterus/cervix, leukemia/lymphoma, esophagus, skin and ovary. The leading causes of cancer deaths are cancers of esophagus, leukemia/lymphoma uterus/cervix, breast and ill defined digestive organs.

### Risk Factors

According to epidemiological studies, 80-90% of all cancers are due to environmental factors of which, lifestyle related factors are the most important and preventable. Causation of cancer is multi-factorial.

**A) Environmental Factors:** these are generally held responsible for 80-90% of all cancers. The major environmental factors include:-

1. **Tobacco:** Tobacco in various forms of usage of smoking, chewing etc. is the major environmental cause of cancers of the lung, larynx, mouth, pharynx, esophagus, lip, urinary bladder, pancreas, uterus, cervix, breast and kidney also. In India more than 40% of cancer cases are due to tobacco.. Smoking is by far the leading risk factor for lung cancer.

If a person doesn't smoke but breathes in the smoke of others (called passive smoking or second hand smoke), he is also at an increased risk of lung cancer.

Smokeless tobacco i.e. snuff and chewing tobacco also contains 28 carcinogens i.e. cancer causing agents..

Other than lung cancer, tobacco use has also been linked to **Head and Neck Cancers, Urinary bladder & kidneys, Cervix & Breast, and Colon**

2. **Alcohol:** - excessive intake of alcoholic beverages is associated with esophageal and liver cancer. Some studies have also suggested that beer consumption may be associated with rectal cancer. It is estimated that alcohol contributes to about 3% of all cancer deaths. Alcohol consumption is linked to the following cancers:

- Breast cancer in women
- Primary liver cancer
- Ovarian cancer
- Prostate cancer
- Thyroid cancer

3. **Dietary factors:** smoked fish may be related to stomach cancer, lack of dietary fiber to intestinal cancer, beef consumption to bowel cancer, high fat diet to breast cancer. Food additives and contaminants may also be the causative agents.

4. **Occupational exposures:** accounts for one to five % of all human cancers. These include exposure to benzene, arsenic, cadmium, chromium, asbestos, polycyclic hydro carbons.

5. **Viruses:** Hepatitis B & C may lead to hepatic cancer. HIV virus may lead to Kaposi Sarcoma. The Epstein Barr virus is associated with Burkitt's lymphoma and nasopharyngeal carcinoma. Hodgkin disease is also believed to be caused by virus.

6. **Parasites:** Parasitic infections may increase the risk of cancer e.g. schistosomiasis in Middle East producing carcinoma of the bladder.

7. **Others:** environmental factors e.g. sunlight, radiation air pollution and water pollution, medication; pesticides etc are related to cancer.

8. **Customs, habits & life styles:** familiar examples are association between smoking and lung cancer, tobacco & betel chewing & oral cancer etc.

**B) Genetic factors:** genetic influences have long been suspected e.g. retinoblastoma occurs in children of the same parent, Mongols are more likely to develop cancer (leukemia) than normal children. However genetic factors are less conspicuous and more difficult to identify.

## **Prevention of Cancer**

### **Primary Prevention of Cancer:**

1. **Control of alcohol & tobacco consumption:** Primary prevention offers the greatest hope for reducing the number of tobacco-induced and alcohol related cancer deaths. It has been estimated that control of tobacco smoking alone would reduce the total burden of cancer by over a million cancers each year.
2. **Personal Hygiene:** improvement in personal hygiene may lead to decline in certain types of cancer like cancer cervix.
3. **Radiation:** special efforts should be made to reduce the amount of radiation including medical radiation received by each individual to a minimum without reducing the benefits.
4. **Occupational exposures:** measures to protect workers from exposure to industrial carcinogens should be enforced in industries.
5. **Immunization:** in case of primary liver cancer, immunization against Hepatitis B virus may have some beneficial effect.
6. **Foods, drugs & cosmetics:** these should be tested for carcinogens
7. **Air Pollution:** control of air pollution is another preventive measure
8. **Treatment of precancerous lesions:** early detection and prompt treatment of precancerous lesions such as cervical tears, intestinal polyps, warts, chronic gastritis, chronic cervicitis etc. is one of the important steps in cancer prevention.
9. **Legislation:** legislation also has a role in primary prevention. The solution to problem of cancer is not to be found in research laboratories but in legislatures e.g. legislation to control environmental carcinogens like tobacco, alcohol, air pollution.

10. **Health Education:** this is an important aspect of primary prevention. It aims at motivating people to seek early diagnosis and timely treatment. Some important warning signals or cancer are:

- a. a lump or hard area in the breast
- b. a change in a wart or mole
- c. a persistent change in digestive and bowel habits
- d. a persistent cough or hoarseness of voice
- e. excessive loss of blood at the monthly period or loss of blood outside the usual dates
- f. blood loss from any natural orifice(Opening)
- g. a swelling or sore that does not get better
- h. unexplained weight loss

#### **Secondary Prevention of Cancer:**

1. **Cancer Registration:** It provides a base for assessing the magnitude of the problem and for planning the necessary services. Cancer registries are basically of two types:

- **Hospital Based registries:** this includes all patients treated by a particular institution, whether in-patients or out –patients. Since hospital population will always be selected population, the use of these registries for epidemiological purposes is limited.
- **Population based Registries:** the aim of this is to cover the complete cancer population in a given geographic area. The data from such registries can provide the incidence rate of cancer & is a useful tool in epidemiology.

2. **Early Detection of cases:** cancer screening is the main tool for early detection for cancer at a pre-invasive or pre-malignant stage. Effective screening programs have been developed for cervical cancer, breast cancer & oral cancer.

3. **Treatment: cancer** can be treated by Surgery, by Chemotherapy, by Radiotherapy and by Palliative care.

## **Cancer Control in India**

India is one of the first few developing countries where a nation-wide cancer control programs were launched. Government of India took its first initiative in 1971. The National Cancer Control Program for India was formulated in 1984 with four major goals

1. Primary prevention of tobacco related cancer
2. Early detection of the cancers of easily accessible sites
3. Augmentation of treatment facilities
4. Establishment of equitable, pain control and palliative care network throughout the country

## **Cancer Control Program in Punjab**

### **(A) Detection of Cancer**

- **Imaging facilities are available as follows:**
- X-Ray: CHC, SDH, DH and Medical college Hospitals.
- Ultrasound: Sub-divisional, district and G MC Hospitals.
- CT scan: all Govt. Medical College Hospitals.
- **Biopsy:** CH Jalandhar and Govt. Medical College Hospitals.
- **Mammography:** Civil Hospital Bathinda and MKH Patiala
- **Laboratory:** Fine Needle Aspiration Cytology, Peripheral Blood Smear examination available at District Hospitals and Medical College Hospitals

### **(B) Treatment of Cancer: facilities are available as follows**

- **Surgery:** Sub-divisional, District and Medical College Hospitals.
- **Chemotherapy:** Medical College Hospitals.
- **Radiotherapy:** Medical College Patiala.
- **Palliative Care:** It is provided at all levels. It includes relief of pain and symptomatic treatment of terminally ill patients. It also includes provision of psychosocial support and aims at improving quality of life of patients.

## Steps taken by Punjab Government to combat Cancer: -

### 1. Regional Cancer Center:

The Post Graduate Institute of Medical Education & Research, Chandigarh has been recognized as Regional Cancer Centre in March, 2005 by Ministry of Health & Family Welfare, Govt of India, to cater to UT, Chandigarh and the State of Punjab. Regional Cancer Centre provides comprehensive cancer treatment services and supportive care to patients. It is also a referral centre for other hospitals.

### 2. Heavy Metal Testing:

The testing of heavy metals in drinking water like Arsenic, Cyanide, Chromium, Lead, and Mercury has been started in the State Public Health Laboratory.

Report of Heavy metal testing of water samples by State Public Health Laboratory from Jan, to Oct.15, 2009 is as follows:

<b>Districts</b>	<b>No. of samples tested for heavy metals</b>	<b>No. of samples showing excess than permissible limits</b>
Amritsar	7	Nil
Bathinda	10	Nil
Faridkot	10	Nil
Hoshiarpur	12	Nil
Ludhiana	5	Nil
Mukatsar	5	Nil
Ropar	7	Nil
S.A.S.Nagar	9	Nil
Sangrur	17	Nil
<b>Total</b>	<b>84</b>	<b>Nil</b>

### 3. PGI study:

PGI Chandigarh has also recommended a multiple pronged strategy for remedial steps to overcome this fatal disease of cancer which includes

providing safe drinking water supply, discouraging the use of tobacco and alcohol and discouraging indiscriminate use of pesticides etc., to refrain from storing food or drinking water in empty containers of pesticides and from washing these containers in the canal water etc.

These recommendations have been circulated to all the Civil Surgeons of the State to be implemented in the district.

#### **4. Projects completed:**

- Mammography unit at Civil Hospital Bathinda and Mata Kaushalya Hospital Patiala.
- Brachytherapy Machine costing Rs 70 lacs for the treatment of cancer patients has been installed at Govt. Medical College Patiala.
- Cobalt Source for the treatment of cancer patients has been installed at Sri Guru Ram Das Institute of Medical Sciences and Research with assistance of Rs. 25.00 Lac from Govt. of Punjab and is working since June, 2009.

#### **5. Ongoing Projects:**

- **Cancer Registry:**

ICMR has approved the proposal for setting up a Population Based Cancer Registry at Bathinda and has asked to submit a project proposal on the prescribed format. The project has been submitted to ICMR for sanction on dated 30.10.2009

- State Government has executed an agreement on 5.08.2009 with Max Health Care to set up Super Specialty Hospital for Cancer & Trauma Care in the premises of Civil Hospital Mohali on a spare land of 3.15 acre and setting up of Super Specialty Hospital Cancer & Cardiac Hospital in the premises of Civil Hospital Bathinda on a spare land of 4.8 acre. The lease deeds for both the projects have been executed and the hospitals are likely to be completed within 18 months.
- Regional Cancer Centre at Government Medical College Amritsar has been recommended by a team of experts for the treatment of poor cancer patients. Regional Cancer Center is under construction at Guru Nanak

Hospital Amritsar. Government of India has provided Rs. 2.00 Crore for machinery and equipment. The rooms for machinery have been completed. Flooring and finishing is to be done after installation of machinery. Order for the purchase of Cobalt-60 has been placed in July 2009.

- Simulator and Treatment Planning system for Govt. Medical College Patiala. Government of India has provided Rs. 2.00 Crore for this purpose. The order for the purchase of the same is being placed.
- Mammography unit is to be installed at Medical College Patiala. Rs. 30 lacs have been provided for this. The case of purchase of the unit is under process.
- Rs. 3.00 Crore have been provided by Govt. of India for machinery and equipment (Rs. 2.10 lacs) and construction (0.90 lacs) of Radiotherapy unit at Sri Guru Gobind Singh Medical College Faridkot. The construction of the rooms where machinery is to be installed has been completed, the Cobalt Unit has been purchased and will be installed soon. The construction work of the radiotherapy unit will be completed by 31-12-2009. No objection certificate from Baba Atomic Research Center (BARC) will be received shortly. However cancer patients are being treated with chemotherapy.

#### **6. Projects under consideration of Govt. of India:**

- Onconet Service-Tele-Medicine Service is to be established by Govt. of India. Regional Cancer Centre PGI will be connected to four District Hospitals namely Hoshiarpur, Sangrur, Bathinda and Muktsar for this service.
- District Cancer Control Programme for districts Hoshiarpur and Patiala. This programme is to be implemented by PGI Chandigarh.

## **7. Other facilities to cancer patients:**

- Financial assistance under State Illness fund through Punjab Nirogi Society is provided to cancer patients along with other life threatening diseases belonging to below poverty line families up to the tune of Rs. 1.5 Lacs. Financial assistance amounting to Rs. 11 lakh has been distributed to the BPL patients for treatment of the life threatening diseases. Out of which Rs. 3.20 lakh has been given to the patients suffering from cancer.
- School children suffering from cancer are provided free treatment by Punjab Government. 29 school children have been referred to PGI, Chandigarh till 4th November, 2009.
- Punjab Government provides free travel facility to cancer patients.
- Health Education activities are under taken to make people aware about the causes signs and symptoms and prevention of cancer.