National Cancer Control Programme

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 an 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 lead 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:-

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

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

<table>
<thead>
<tr>
<th>District</th>
<th>Cancer Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bathinda</td>
<td>424</td>
</tr>
<tr>
<td>Faridkot</td>
<td>163</td>
</tr>
<tr>
<td>Mukatsar</td>
<td>221</td>
</tr>
<tr>
<td>Patiala</td>
<td>641</td>
</tr>
<tr>
<td>Ropar</td>
<td>381</td>
</tr>
</tbody>
</table>

Leading sites of Cancer in 3 districts Ropar, Bathinda and Patiala of Punjab as per report of NCRP (2002) are given in the tables below:
According to ICMR report 2002 the number of cancer cases from districts is as follows:-

**Leading sites of Cancer in District Patiala**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leading site</td>
<td>Number</td>
<td>Leading site</td>
<td>Number</td>
</tr>
<tr>
<td>1.</td>
<td>Larynx</td>
<td>34</td>
<td>Breast</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>Oesophagus</td>
<td>33</td>
<td>Cervix Uteri</td>
<td>54</td>
</tr>
<tr>
<td>3.</td>
<td>Prostate</td>
<td>26</td>
<td>Oesophagus</td>
<td>23</td>
</tr>
<tr>
<td>4.</td>
<td>Bladder</td>
<td>23</td>
<td>Ovary</td>
<td>16</td>
</tr>
<tr>
<td>5.</td>
<td>NHL</td>
<td>20</td>
<td>Gallbladder</td>
<td>10</td>
</tr>
<tr>
<td>6.</td>
<td>Tongue</td>
<td>19</td>
<td>Corpus Uteri</td>
<td>8</td>
</tr>
<tr>
<td>7.</td>
<td>Tonsil</td>
<td>12</td>
<td>Bladder</td>
<td>7</td>
</tr>
<tr>
<td>8.</td>
<td>Oth. Skin</td>
<td>10</td>
<td>Hypopharynx</td>
<td>7</td>
</tr>
<tr>
<td>9.</td>
<td>Lung</td>
<td>10</td>
<td>Vagina</td>
<td>7</td>
</tr>
<tr>
<td>10.</td>
<td>Hypopharynx</td>
<td>8</td>
<td>Colon</td>
<td>6</td>
</tr>
</tbody>
</table>

**Total** | 337 | **Total** | 304 |

**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.

**Leading sites of Cancer in District Bathinda**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leading site</td>
<td>Number</td>
<td>Leading site</td>
<td>Number</td>
</tr>
<tr>
<td>1.</td>
<td>Oesophagus</td>
<td>28</td>
<td>Breast</td>
<td>68</td>
</tr>
<tr>
<td>2.</td>
<td>Mouth</td>
<td>10</td>
<td>Cervix Uteri</td>
<td>60</td>
</tr>
<tr>
<td>3.</td>
<td>Tongue</td>
<td>9</td>
<td>Ovary</td>
<td>13</td>
</tr>
<tr>
<td>4.</td>
<td>Prostate</td>
<td>8</td>
<td>Myel. Leuk.</td>
<td>11</td>
</tr>
<tr>
<td>5.</td>
<td>Myel. Leuk</td>
<td>8</td>
<td>Oesophagus</td>
<td>10</td>
</tr>
<tr>
<td>6.</td>
<td>Lymph. Leuk</td>
<td>8</td>
<td>Gallbladder (</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>Conn. Tissue</td>
<td>7</td>
<td>Hypopharynx</td>
<td>4</td>
</tr>
<tr>
<td>8.</td>
<td>Bladder</td>
<td>7</td>
<td>Tongue</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>Rectum</td>
<td>6</td>
<td>Oth. Skin</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>Oth. Skin</td>
<td>6</td>
<td>Conn. Tissue</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total** | 183 | **Total** | 241 |

**Leading sites of Cancer in District Ropar**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Leading site</td>
<td>Number</td>
<td>Leading site</td>
<td>Number</td>
</tr>
<tr>
<td>1.</td>
<td>Larynx</td>
<td>16</td>
<td>Breast</td>
<td>48</td>
</tr>
<tr>
<td>2.</td>
<td>NHL</td>
<td>14</td>
<td>Cervix Uteri</td>
<td>42</td>
</tr>
<tr>
<td>3.</td>
<td>Bladder</td>
<td>11</td>
<td>Ovary</td>
<td>12</td>
</tr>
<tr>
<td>4.</td>
<td>Oesophagus</td>
<td>10</td>
<td>Oesophagus</td>
<td>11</td>
</tr>
<tr>
<td>5.</td>
<td>Mouth</td>
<td>9</td>
<td>Mouth</td>
<td>7</td>
</tr>
<tr>
<td>6.</td>
<td>Hypopharynx</td>
<td>7</td>
<td>Conn. Tissue</td>
<td>6</td>
</tr>
<tr>
<td>7.</td>
<td>Brain, NS</td>
<td>6</td>
<td>NHL</td>
<td>6</td>
</tr>
<tr>
<td>8.</td>
<td>Lung</td>
<td>6</td>
<td>Corpus Uteri</td>
<td>4</td>
</tr>
<tr>
<td>9.</td>
<td>Prostate</td>
<td>6</td>
<td>Uterus Uns.</td>
<td>4</td>
</tr>
<tr>
<td>10.</td>
<td>Tongue</td>
<td>5</td>
<td>Lung</td>
<td>4</td>
</tr>
</tbody>
</table>

**Total** | 166 | **Total** | 215 |
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. snuffs 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 Ebstein 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. **Customs, habits & lifestyles**: Familiar examples are association between smoking and lung cancer, tobacco & betel chewing & oral cancer etc.

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

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

A) 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 early treatment. Some important warning signals or cancer are:

    - A lump or hard area in the breast
    - A change in a wart or mole
    - A persistent change in digestive and bowel habits
    - A persistent cough or hoarseness of voice
    - Excessive loss of blood at the monthly period or loss of blood outside the usual dates
    - Blood loss from any natural orifice (Opening)
    - A swelling or sore that does not get better
    - Unexplained weight loss

**B) 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 & useful tool in epidemiology.

2. **Early Detection of cases**: Cancer screening is the main tool for early detection of cancer at a pre-invaive or pre-malignant stage. Effective screening program 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 Program was 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 cancers.
2. Early detection of the cancers of easily accessible sites
3. Augmentation of treatment facilities
4. Establishment of an equitable pain control and palliative care network throughout the country.
Achievement of Punjab Government

Prevention of Cancer

1. The testing of heavy metals in drinking water has been started in the State Public Health Lab.

2. The State Government has installed Reverse Osmosis Systems (RO) in various villages of districts.

3. Health Education activities are undertaken to make people aware about the causes, signs and symptoms and prevention of cancer.
   - "National Cancer Awareness Day". State level function was organized at District Mansa on 7th Nov. 2010 & “Special Cancer Awareness Campaign” from 7th November to 13th November, 2010 was carried out. During this campaign, people were made aware about signs, symptoms, causes, prevention and treatment of cancer by organizing plays/ dramas, exhibition & distributing pamphlets/posters.
   - “Mass cancer screening & awareness camps” Cancer detection & awareness camps were organized on 26th March, 2011 in all district hospitals of Punjab.
   - “Mass cancer screening camps” were held at Civil Hospital Ludhiana and Badal in the month of December, 2011.

4. To control the excessive use of Pesticides
   - To control the use the pesticides concerted efforts are being made by the Department of agriculture. Pesticides consumption has declined drastically from 5975 Metric tons to 5690 Metric tons from 2006-07 to 2010-11. A major reason of this decline is the introduction of B.T Cotton in the state during the year 2006-07. The number of pesticide sprays has been reduced. To control cotton insect-pests i.e. American Bollworm, Tobacco caterpillar, pink bollworm, aphid/ jassid, white fly etc. pesticides spray has been reduced. Hence use of pesticides has been controlled as compared to the earlier years.
     - Manufacture, import and use of pesticides which are very injurious have been banned by the Government.
     - The registration of some pesticides which is not in the interest human beings as well as animals has been withdrawn.
     - The use of some dangerous pesticides has been restricted.
     - Registration of some pesticides has already been refused.
     - Farmers training camps are being conducted at village, block and district levels to educate the farmers on the judicious use of pesticides.

Diagnosis of Cancer

1. Mammography units have been established at Civil Hospital Bathinda, Patiala, Jalandhar and Hoshiarpur.

2. Punjab Government has signed a MoU with NGO Roko Cancer Trust for the year 2010-11 and 2011-12 to spread cancer awareness and conduct camps for screening of women for breast cancer in Muktsar, Moga, Faridkot, Amritsar, Tarn-Taran, Gurdaspur and Ferozepur districts. The NGO started conducting camps from February, 2010 till date. The suspected cases are referred to Govt. Medical College & Hospitals for further investigation & treatment. ₹ 30.00 lakhs in each year has been given to NGO Roko Cancer Trust for this purpose.
3. **Cancer Registry**

- Population Based Cancer Registry (PBCR): Population Based Cancer Registry (PBCR) has been started & is collecting data at Govt. Medical College Patiala.
- Hospital Based Cancer Registry (HBCR): PGI, Chandigarh has been started & is collecting data.

**Free/Cheap Treatment of Cancer**

1. Financial assistance under State Illness Fund through Punjab Nirogi Society is provided to cancer patients along with other life threatening diseases belonging to BPL families.

2. Mukh Mantri Punjab Cancer Raahat Kosh Society – Under this scheme ₹20.00 crores has been made available by Govt. of Punjab, for treatment of all cancer patients except Govt. employees and those having health insurance cover. An amount of upto ₹1.50 lakhs is made available for treatment of every cancer patient. Till date a grant of about ₹20.00 crores has been sanctioned to hospitals for treatment of cancer patients 2634 Patients out of 2820 applicants have been sanctioned about Rs 28.00 Crores.

3. School children suffering from cancer are provided free treatment by Health Deptt. So far, 134 children suffering from cancer were referred to PGI, Chandigarh and 69 Children to Mohan Dai Oswal Cancer Hospital, Ludhiana Rs. 146.07 Lac has already been spent on them.

4. Brachytherapy Machine for the treatment of cancer patients has been installed at Government Medical College & Hospital, Patiala.

5. Radiotherapy machine & Cobalt Unit has been started at Sri Guru Gobind Singh Medical College Faridkot.

6. Cobalt Source for the treatment of cancer patients has been installed at Sri Guru Ram Das Institute of Medical Sciences & Research Centre Amritsar.

7. Onconet service has been started at Civil Hospital Bathinda.

8. Regional Cancer Centre, PGI is connected to all districts of Punjab via Tele-Medicine facility.


10. State Government has executed an agreement with Max Health Care to set up Super Specialty Hospital for Cancer & Trauma Care in the premises of Civil Hospital SAS Nagar (Mohali) and setting up of Super Specialty Cancer & Cardiac Hospital in the premises of Civil Hospital, Bathinda. These hospitals are fully functional.

11. National Program for Cancer, Diabetes, Cardiovascular diseases & Stroke (NPCDCS)

   Progress report is as follows:

   - District Bathinda, Hoshiarpur & Mansa are identified under Cancer Component.
   - Facility Survey has been done for establishment of Non Communicable Diseases (NCD) Clinics and District NCD cells under the Programme.
   - NCD Clinics will have facilities where Day Care Chemotherapy & Mammography of the patients will be done.
   - NCD Cell will monitor the activities of Cancer component in terms of financial requirements & overall functioning under NPCDCS.
• Tertiary Cancer Centre at GMC Faridkot allotted Rs.4.8 Crore release against total of Rs.6.0 Crore

12. Cancer Hospital in Bhatinda: Being set up with investment of Rs.60 Crore, by BFUHS, Tenders floated for construction.

Targets/ Goals

• Collection of reliable and accurate data from Population Based Cancer Registry & Hospital Based Cancer Registry at Govt. Medical College & Hospital, Patiala & PGI (MER), Chandigarh to know about actual incidence /prevalence of cancer in Punjab to be able to plan focused interventions /Strategies to control the scourge of cancer.

• Ensuring timely distribution of funds to the applicants under Mukh Mantri Punjab Cancer Rahaat Kosh Scheme as per latest revised draft of guidelines.