

CANCER PREVENTION AND CONTROL IN INDIA

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Non-communicable diseases including cancer are emerging as major public health problems in India. These diseases are lifestyle related, have a long latent period and needs specialised infrastructure and human resource for treatment. India still has a high burden of preventable communicable diseases and will offer competition for the resource allocation.

The risk factors of the major non-communicable diseases (Diabetes Mellitus, Cardiovascular Diseases, Diabetes, and many types of Cancer) are tobacco, dietary habits, inadequate physical activity and alcohol consumption. This offers the prospect for integrated primary prevention strategies.

Magnitude of the problem

Population based cancer registries within the National Cancer Registry Programme and outside the network has provided a picture of the cancer pattern in India (Fig.1). There are areas, which are largely un-represented, but the general pattern seems to hold good.

Based on the cancer registry data it is estimated that there will be about 800,000 new cancers cases in India every year. At any given point there is likely to be 3 times this load that about 240,000 cases.

Cancer sites associated with tobacco form 35 to 50% of all cancers in men and about 17% of cancers in women. These cancers are amenable to primary prevention and can be controlled to a large extent.

Cancer Epidemiology

Cancer is group of diseases with similar characteristics. Cancer can occur in all living cells in the body and different cancer types have different natural history. Epidemiological studies have shown that 70-90% of all cancers are environmental. Lifestyle related factors are the most important and preventable among the environmental exposures.



Fig.1 Leading cancer sites in Population Based Registries in India 1995-96

Tobacco consumption either as chewing tobacco or smoking tobacco will account for 50% of all cancers in men. Dietary practices, reproductive and sexual practices etc will account for 20-30% of cancers. Appropriate changes in lifestyle can reduce the mortality and morbidity from a good proportion of Cancer, Diabetes Mellitus and Cardiovascular diseases.

Tobacco

Tobacco is the most important identified cause of cancer and is responsible for about 40 to 50% of cancers in men and about 20% of

cancers in women. India has the added burden of tobacco chewing which is more prevalent than smoking in many areas. Tobacco chewing has resulted in a huge burden of Oral cancers and oral precancerous conditions. There are various other forms of tobacco use peculiar to certain geographic regions of India and these need special attention.

Diet

The causes of cancer in U.S.A. was estimated by Doll and Peto in 1981. Tobacco was found to be responsible for 25-40% of cancers and diet for 10-70% of cancers. In India dietary habits may be responsible for about 10 to 20% of cancers. Dietary factors may enhance the role of other risk factors. Most of the cancers have some relationships with diet. Predominant among them are cancers of the upper aero digestive tract (mouth, throat, oesophagus and lungs), stomach, large intestine, and breast cancer in women.

The role of diet takes special importance in countries like India, which are fast moving towards industrialization and westernization. We had a predominantly plant based diet and with the advent of western life style we are moving towards a diet rich in animal proteins. This coupled with other habits like smoking and alcohol will lead to increase in the chronic disease burden especially cancer and cardiovascular diseases. Prompt action has to be taken to spread the message of healthy life style and dietary practices.

Cancer of the head and neck

The main risk factors for these cancers are tobacco and alcohol. A diet rich in green and yellow vegetables has been shown to offer protection against oral cancer. Avoidance of tobacco and alcohol is the most important preventive action against mouth, throat and lung cancers. Cancer of the Oral cavity can be detected early and every opportunity in which a health care person interacts with a tobacco habituee should be exploited to detect pre cancerous conditions or cancers of the oral cavity.

Cancer of the stomach

Japanese had the highest rate of stomach cancer of the world and the rates in Japanese migrants have dropped to very low levels as

that of Americans when they migrated to the United States. This is clear evidence of the dietary pattern and risk of stomach cancer. The advent of refrigeration has dramatically reduced stomach cancer incidence as it has revolutionised food preservation. Consumption of large amounts of red chillies, food at very high temperatures and alcohol consumption are the main risk factors for stomach cancer in India. Consumption of a tobacco extract 'Tuibur' has been linked to the high rates of Stomach cancer in Mizoram. Primary prevention is the best strategy for prevention of stomach cancer.

Cancer of the large intestine

Heavy consumption of red meat can lead to risk of colon cancer. White meat such as that of poultry do not have this risk. There is an international correlation in between the occurrence of large bowel cancer and consumption of red meat. In South India there is a trend towards increasing consumption of red meat and this can lead to increased risk for large bowel cancer.

Cancer of the breast in women

Breast cancer is emerging as the leading cancer in women. A large number of factors are identified as risk factors for breast cancer. Late age at first pregnancy (greater than 30 years), single child, late age at menopause etc are some of them. A high fat diet is also identified as a risk factor. Physical activity is found to be protective for breast cancer. The sudden changes towards affluent life styles have reduced the physical activities to a minimum and increased the consumption of diets rich in fat. High fat diets during the pubertal age and obesity in the post menopausal age are risk factors for breast cancer.

Regular breast self examination by women themselves is a very good way of detecting breast cancer in early stages. Detecting a cancer when it is in the very early stage can improve the cure rate from breast cancer.

Cancer of the uterine cervix

Cancer of the uterine cervix is still the most common cancer among women in India. Improvements in living standards and access to health

care have reduced the rate of occurrence of cervical cancer in certain States like Kerala. However the changing sexual behaviour in young adults might lead to another wave of cervical cancers. Early age at first intercourse, multiple sexual partners, poor sexual hygiene, repeated child birth etc are some of the reproductive risk factors for cervical cancer. Improvements in the living standards of women have resulted in a reduction in the incidence of cervical cancer. Regular cervical cytology examination (papsmear) by all women who have initiated sexual activity can prevent the occurrence of cervical cancer. This has been successfully achieved in many European countries. However there are many limitations for cytology based cervical cancer screening in India. The States in India are in various levels of health care delivery and health infrastructure and it is possible that there are certain areas in which screening programmes could be initiated. The system for screening, with facilities for call back and proper referral are very important, irrespective of the screening strategy.

Cancer prevention and treatment strategies for India

India is the one of the few developing countries that has formulated a National Cancer Control Programme. The programme envisages control of tobacco related cancers; early diagnosis and treatment of uterine cervical cancer; and distribution of therapy services, pain relief and palliative care through augmentation of health infrastructure. Suggested surrogate outcome measures include change in tobacco use, 'Knowledge, Attitude, Practice'(KAP) pattern, compliance to screening programmes, changes in referral practices and shift in stage distribution.

Primary prevention and screening programs

Primary prevention is the most cost effective prevention program as it aims to reduce the incidence of cancer by risk factor modification. Fifty percent of all cancers in males are tobacco related and a large proportion of them can be prevented by anti-tobacco programs. This has to be publicised more widely. Teen age students need to be targeted as most of them pick up habits at this time. The school curricula should involve messages for a healthy life style and warn about the harmful effects of tobacco and alcohol. Legislation has to be enforced for prohibiting tobacco advertisement and sale of tobacco

to youngsters. A proportion of cancers are considered to be related to the dietary practices and the importance of a healthy diet rich in green and yellow vegetables and fruits has to be highlighted. Cancer of the uterine cervix can be controlled to a certain extent by practising genital hygiene and safe sexual practices.

Cervical cytology (pap smear) screening programs were found to be successful in reducing cervical cancer incidence and women in the age group 35 to 64 years should undergo regular pap smear screening. Given the limitations in large scale population based screening programmes, India can consider primary prevention of Cervical cancer by promoting genital hygiene and sexual behaviour. States that have achieved a high level of health care delivery can consider starting organised screening programmes. The primary target should be to offer once a life time screening for all women at the age of 40 years. Government and private health care providers can join in this effort and offer these services.

Mammographic screening for breast cancer may not be cost effective in India at present, but regular breast self examination needs to be promoted for early detection of breast cancer. Breast self examination can be propagated through print and electronic media as well as through health care personnel in various settings.

Measures identified and propagated for cancer control in the developed countries may not be applicable for the Indian context. We have to find answers to our problems through methods which are feasible and evaluable in the Indian context.

Cancer prevention needs to be considered as part of the Non Communicable Diseases prevention programme as it will make it more effective and feasible. The risk factors, Alcohol, Tobacco, Bad Diet and Physical inactivity are risk factors for most of the Non Communicable Diseases and has to be approached together as lifestyle modification.

Cancer detection & prevention clinics

Late stage at presentation is the main reason for the poor survival from cancer in India. The late presentation is mainly due to the lack of diagnostic facilities at the peripheral levels. District hospitals in India

have the services of specialists and provide reasonable services. These hospitals can have a 'Cancer Detection and Prevention Clinic', which will provide diagnostic services and minimal treatment. The diagnostic services set up in the hospital can also be of use to all the patients who attend this hospital. Cost recovery may be attempted from the beginning and an experience in Kerala has demonstrated that such services are feasible and sustainable. The services as well as the organogram of such a centre is shown in Fig. 2. This centre in Kerala provides a good range of services and the cytology services have helped to diagnose cancers at an early stage. Provision of Palliative Care services has also been accepted by the community. Capital funding may be raised through people's participation and from various other sources and once established, the income generated by the various investigations is sufficient to run the programme. Existing staff of the hospital can be trained to provide the services. Regional Cancer Centres can set up cancer detection and prevention centres in District hospitals.

Treatment facilities

A multidisciplinary approach to cancer treatment is essential and this has to be made available at all Regional Cancer Centres. The services of a trained surgeon and a Clinical Oncologist are needed to plan the most appropriate treatment.

Radiotherapy services are still the mainstay of treatment given the large proportion of advanced epithelial cancers in India. Given the long waiting lists and the distance that patients have to travel to reach treatment facilities, optimal strategies have to be identified. Patients for palliative treatment and curative treatment need to be identified at the beginning of the treatment plan and palliation may be achieved with the minimum machine time

An essential drug list has to be prepared for cancer chemotherapy and chemotherapy services for common cancers have to be made available in all centres. Advanced facilities for high intensity chemotherapy for leukaemia's and other cancers where chemotherapy is the mainstay of treatment need be provided at the Regional Cancer Centres.

Surgical Oncology training has to be provided to General Surgeons during their training as well as to those in practice as majority of the cancers are likely to present themselves to a surgeon in the first instance.

Palliative care

More than 75% of cancers in India present in advanced stages and Palliative care and pain relief are essential to provide good quality life for these patients. Oral Morphine is the mainstay of cancer pain management and this has to be made available at all centres. The medical doctors as well as the administrators have to be sensitised and educated about the use of Oral Morphine and the regulations have to be made simple so that this essential drug is made available to those in pain.

Half way homes and Hospices may be considered through Non Governmental Agencies as well as other sources, but they can work well when they are attached to a major cancer treatment centre.

Facilities and services to be made available at different levels of health care delivery in India can be concerned as given in Fig. 3.

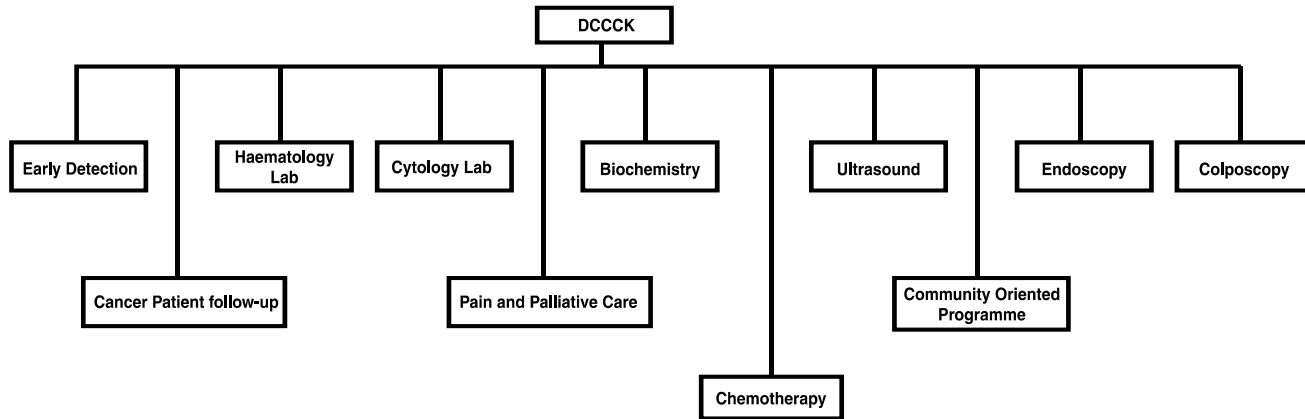
Cancer registry network

Evaluation of the programme has to be undertaken with reliable data on the incidence and mortality from cancer. A network of cancer registries have to be set up towards this end. Death registration and death certification are inadequate and incomplete at present and cancer registries are the only means of obtaining data on the disease. To start with hospital based cancer registries can be initiated by the regional cancer centres and they can later on be expanded to population based cancer registries. Registries under the Indian Council of Medical research as well as those outside can be networked. Cancer control programmes may be initiated in Registry areas so that effective strategies can be identified by monitoring the registry data.

Human resource generation

Cancer control programmes need a large number of trained personnel in various specialities. These include Epidemiology and Statistics,

Fig. 2.

ORGANIZATION OF THE DISTRICT CANCER CARE CENTRE, KOZHENCHERRY

REGIONAL CANCER CENTRE

Health Promotion/Home Care/Early Detection/Pain Relief/Palliative Care/Comprehensive Cancer treatment/ Organise screening programmes/Cytology training/ Basic and applied research/Training of all categories of personnel/Cancer Registries/Epidemiology

MEDICAL COLLEGE HOSPITAL

Health Promotion/Home Care/Early Detection/ Pain Relief/Palliative Care/ Treatment of common cancers/Training of medical officers/paramedical personnel

DISTRICT HOSPITAL

Health Promotion/Home Care/ Early Detection/Pain Relief/ Palliative Care/Treatment of common cancers

TALUK HOSPITAL/SUB DISTRICT HOSPITAL

Health Promotion/Home Care/Early Detection/ Pain Relief/Palliative Care

Cancer Registry Operations, Cytotechnicians and Cytotechnologists, Nurses trained in Palliative Care and in care of cancer patients on Chemotherapy and radiotherapy, medical personnel in all aspects of cancer treatment, Physiotherpists and Occupational Therapists, Counsellors and various other specialists. Once the programme is initiated the services of all the above categories of personnel are needed and the Regional cancer Centres should take this as a priority and start training programmes.

Strategy Matrix

Cancer Control is an area in which we need participation from all sectors of the society. There are areas in which various agencies can put in their contributions. Keeping targets will help to monitor the programme as well as to identify the usefulness of the strategies.

Table 1 presents the strategy matrix as well as the agencies with the area of work under major areas of prevention and control of cancer.

Role of International Agencies

The World Health Organization has promoted National Cancer Control Programmes and India is one of the few countries that has actively taken up this initiative. The major areas in which WHO contributes are Tobacco Control, Palliative Care and Human Resource Development. India could take up these programmes and demonstrate to the World that Cancer Control is feasible and become a model for Cancer Control Programmes in low resource settings. The International Union Against Cancer (UICC) and other agencies are supporting fellowships and India can utilize these opportunities to get the much needed human resource for the country. The results achieved in India should be widely propagated through the International Agencies, to help other countries and to get support from various agencies.

| Domain | Source | Agency | Strategy | Objective | Endpoint |
|--------------------|---------------------------------------|--|----------------------------------|---|--|
| Primary prevention | Tobacco cessation Sexual Cancer | Health Department ICMR NCHADS | 2000-2005 Jesot Eto Meb | Reduce tobacco consumption Reduce HIV/AIDS Reduce the number of new HIV/AIDS | Reduce the number of deaths from TCH |
| Screening | Cervix | Health Department ICMR | 2000-2005 Jesot Eto Meb | To reduce the number of deaths from cervical cancer in women | Reduce the number of deaths from cervical cancer in women |
| Early detection | Colorectal Breast | Health Department ICMR NCHADS | 2000-2005 Jesot Eto Meb | To reduce the number of deaths from colorectal and breast cancer in women | Reduce the number of deaths from colorectal and breast cancer in women |
| Treatment | Breast Cervix Colorectal | Health Department ICMR NCHADS | 2000-2005 Jesot Eto Meb | To improve the quality of care for breast, cervical and colorectal cancer patients | Reduce the number of deaths from breast, cervical and colorectal cancer |
| End-stage care | Colorectal Breast Cervix | Health Department ICMR NCHADS | 2000-2005 Jesot Eto Meb | To improve the quality of care for end-stage cancer patients | Reduce the number of deaths from end-stage cancer |