

Projecting Oncology in to Next Millenium: 'Point' Next Millenium

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As we stand on the threshold of the next millenium, it is imperative to review the pattern and pace of progress in oncology and our preparedness to meet the challenges ahead. Despite the emphasis on prevention and early detection, the total cancer load and mortality of most cancers is gradually rising. Globally, the burden of new cancer cases for 1985 was estimated to be 7.6 million cases. Of these, 52% of the cases occurred in the developing countries. Similarly, 56% of the estimated 5 million cancer deaths also occurred in the developing countries. In India, tobacco related cancers account for approximately half of all the cancers in males and one-sixth of all cancers in females.

It is obvious that we have not been able to achieve all the goals of our national cancer control program. It is high time that we critically review our strategy and if necessary, redefine realistic goals. While planning for the next millenium we have to take into account the general health and socioeconomic indices; total cancer load; trends in the incidence of various cancers and their relationship to the lifestyle; and the equipment, facilities and human resources available for the treatment of this enormous cancer burden. The strategies for population screening employed in the west are not suitable for our country. At the Tata Memorial Hospital, we have now embarked upon a new early detection programme with breast examination and visual inspection of the cervix by trained health workers. Our initial experience is very encouraging. The treatment cost for the disease like cancer, which affects millions of Indians across all socioeconomic classes should be such that the Government can support it or it is affordable to the commoners. Otherwise the spiraling cost of treatment will negate the benefit of early detection campaigns.

There is urgent need for innovative translational research for rapid and effective transition of early leads from laboratories to the clinic. In the year 1996, of the 1,11,951 indexed publications in cancer and related topics from the whole world, there were only 777 (0.69%) from India. The training programme for oncologist has to be re-oriented so that they are not only skilled therapists, healers and managers but can also unravel the enigma of cancer biology. Oncologists, scientists and health administrators will now have to work as a cohesive team and be the engines of change.

Key Words: Cancer Care, Prevention, Screening, Epidemiology, Cancer Research

Introduction

As we stand on the threshold of the next millenium we have to ask the question whether we are winning the war against cancer. It is important to critically review the pattern and pace of progress in Oncology and our preparedness to meet the challenges that lie ahead. For the year 1985 it was estimated that new cancer cases worldwide were 7.6 million (Parkin et al. 1993) and 5 million persons died from the disease (Pisani et al. 1993). Half of these new cancer cases and cancer deaths were in the

developing countries. The World Health Organization has estimated that by the year 2015 there will be 15 million new cancer cases annually and approximately two thirds of these will be in the developing countries (Stjernswald et al. 1994). In our country while infectious diseases and malnutrition is undoubtedly a bigger problem, cancer is becoming an increasingly serious public health problem.

In this paper we have reviewed the present and the projected burden of cancer in our country and

our ongoing efforts to minimize the pain, suffering and deaths from this disease. The strategies employed so far have been analyzed for their efficacy and additional measures have been suggested to substantially reduce the morbidity and mortality in a reasonable time frame.

The Present Scenario

For a realistic planning for the next millenium one has to realize the enormous burden of cancers in India, the types of cancers, trends in the incidence of various types of cancers and the changing age structure of our population. It becomes obvious that our present infrastructure is woefully inadequate to deal with the present situation and urgent steps need to be taken to prevent a crisis situation.

General Health and Socioeconomic Indices in India

As in most developing countries, the general health and socioeconomic indices are poor in India. The population is increasing and is now nearing the one billion mark with two thirds of Indians living in villages. Only two thirds of males are literate and for females the situation is even worse with only a third being literate. In cities and towns, safe drinking water is not available in 19% households, 24% houses have no electricity and 36% have no toilet facilities (Gupta & Mittra 2002). The Indian infant mortality rate has come down to 65 per 1000 births, but this is still three fold higher than in the developed world. The life expectancy has gradually increased to about 60 years now. There has definitely been some progress but at a slower pace than desired. It would be unrealistic to presume that major success in the fight against a formidable foe such as cancer can be achieved without overall development and proper allocation of resources.

Cancer Burden in India

While the age adjusted cancer incidence rate of 100 to 130 per 100,000 population in various parts of our country is considerably lower than in the western countries, due to the size of the population we have a huge cancer load. The ICMR cancer registry data predicts that by the year 2000 there will be approximately one million new cancer cases annually (Biennial Report. ICMR 1992) and at any

given time there will be two to three million cancer cases prevalent in the country.

For the year 1990, age standardized cancer incidence rate of all sites combined was lower in rural Barshi [males 51.4/100,000 and females 55.0/100,000] as compared to metropolitan cities such as Mumbai [males 133.1/100,000 and females 126.6/100,000] (Parkin et al. 1997). However even with lower cancer incidence rates in rural areas, almost half of the new cancer cases are estimated to be from villages where approximately two thirds of our population resides.

According to the Health Information India (1989) published by the Central Bureau of Health Intelligence, cancer accounted for 8 to 9% of all deaths in the age group 45 years and above, both in males and females. Neoplasms, thus ranked as the 4th most important cause of death after cardiovascular disorders, respiratory disorders and infections (ill defined conditions excluded).

Patterns of Cancers and their Relationship to Lifestyle

The types of cancer occurring more frequently are different in various parts of the world and depend on the pattern of carcinogen exposure and genetic susceptibility of the population (Tomatis 1990). In the Indian subcontinent head and neck cancers are the commonest cancers in males and third commonest in females due to a particular pattern of chewing tobacco in paan, quid, gutkha etc. (Sanghavi and Notani 1989). The ten leading sites of cancer as seen at the Tata Memorial Hospital are shown in table 1 (Hospital Cancer Registry, Tata Memorial Hospital 1998). Cancer of the cervix is the commonest cancer in Indian women. However in Mumbai, incidence rate of breast cancer has been steadily increasing and has become the leading cancer site in females, perhaps due to the changing lifestyle. This contrast in the type of commonest cancers in the urban females (Mumbai) as compared to the rural females (Barshi) is shown in figure 1.

Trends in the Incidence of Various Types of Cancer

Cancer trends over a period of time provide the basis for projecting what is likely to happen in the future and thus guide public health policy makers to plan for the facilities, equipment and human resources required for the total care of cancer patients.

Table 1 Ten leading cancer sites: Tata Memorial Hospital Cancer Registry (1995)

MALES	No. (%)	FEMALES	No. (%)
Lung & Bronchus	669 (7.6)	Breast	1781 (25.9)
Oesophagus	636 (7.2)	Cervix	1608 (23.4)
Leukaemia	623 (7.1)	Ovary	347 (5.0)
Buccal Mucosa	545 (6.2)	Oesophagus	285 (4.1)
Pyriform	480 (5.5)	Leukaemia	269 (3.9)
Base Tongue	409 (4.7)	Buccal Mucosa	195 (2.8)
M. Lymphoma	392 (4.5)	Lymphoma	165 (2.4)
S.G. Larynx	361 (4.1)	Thyroid	150 (2.2)
Ant. Tongue	296 (3.4)	Lung & Bronchus	127 (1.8)
Rectum	252 (2.9)	Body Uterus	117 (1.7)
Total	8773	Total	6883

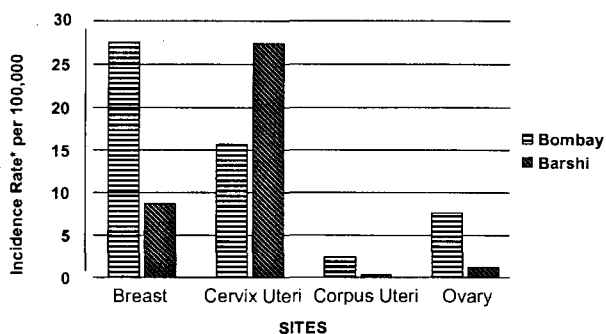


Figure 1 Incidence of female breast and genital tract cancers in Urban (Bombay*) versus Rural (Barshi)*. [Age standardised to World population; *Source: Bombay cancer registry report for the year 1995; + Cancer incidence in Five Continents vol. VII, IARC (1997)]

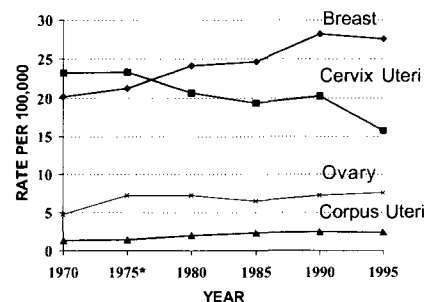


Figure 2 Trends in the incidence of female genital and breast cancer in Bombay: 1970-1995. [Age standardised to world population; Source: Cancer Incidence in Five continents Vol. III to VII, IARC (1976, 1982, 1987, 1992, 1997) & Bombay Cancer Registry Report for the Year 1995; *Incidence rates plotted for 1975 are for 1974 - mid-year for the period 1973-1975

Reliable data on the incidence of cancer is now available from 7 population based cancer registries (PBCR) in operation for varying periods. Of these, Bombay PBCR has been operational for the longest duration - over 30 years and provides interesting data on time trends. In Bombay the age adjusted incidence rate of cancer (all sites combined) has not altered substantially over the 25 year period 1970-1995 and has ranged from approximately 120 to 140/100,000 in both sexes. One needs to look at the individual sites to obtain a meaningful picture or trend. However, for the country as a whole, the annual overall cancer load (all new cases) is increasing not only due to the population growth

but also due to the changing age structure, with proportionately greater increase in older age group.

However, if one looks at the total cancer incidence rates only, the underlying trends in the incidence for different cancer sites such as cervix, oral cavity, lung, etc. may not be apparent. Since the causative factors are different for various cancer sites, each requiring specific interventions, it is important to see the site-specific trends in incidence rates.

Thus a significant increase in the breast cancer incidence rate is in contrast to the significant decrease in the cervix cancer incidence rates in Mumbai during the period 1970 to 1995 (figure 2). This is perhaps a reflection of the changing lifestyle.

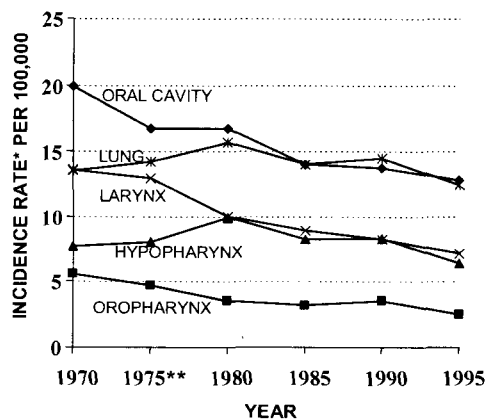


Figure 3 Trends in incidence rates of male tobacco related cancer sites, Bombay: 1970-1995. [Source: Cancer Incidence in Five Continents Vol. III to VII, IARC 1976, 1982, 1987, 1992, 1997] & Bombay Cancer Registry Report for the year 1995. *Age Standardised to World Population; **Incidence rates plotted for 1975 are for 1974 -mid-year for the period 1973-1975].

During the same period, the tobacco related head and neck cancer especially tongue cancer incidence rates in males have decreased in Mumbai (figure 3). This encouraging trend from Mumbai may be attributed to increasing awareness and healthier lifestyle but a detailed study is required to ascertain all the reasons behind this trend. However this encouraging trend in the tobacco related cancers is not so obvious in the data from Bangalore and Madras Cancer Registries. The load of tobacco related cancers in India, in terms of new cases developing annually, has shown a relentless increase over the years and account for approximately 30% for all cancers (table 2).

Facilities for the Diagnosis and Treatment of Cancer in India

Due to the complex biology and natural history of cancer, it should be accurately and timely diagnosed, properly staged and then adequately

treated for improving the cure rates. It is very saddening to note that most of our patients present with advanced stage disease even when our common cancers such as of oral cavity and cervix produce early symptoms; are amenable to inspection/palpation and the diagnosis can be easily confirmed by a punch biopsy and haematoxylin Eosin staining. Only a small proportion of our common cancers need elaborate radiological examination with computerised tomographic (CT) or magnetic resonance (MR) Scans or complicated immunohistological methods for confirming the diagnosis. Presently there is no reliable data regarding the number and quality of diagnostic facilities but most of the common cancers can be diagnosed and staged in the district hospitals and medical colleges.

Patients with early stage disease are treated aggressively with the intent to cure but unfortunately three fourths of all cancers present in advanced stages where one can only hope to palliate their distressing symptoms (Hospital Cancer Registry, Tata Memorial Hospital, 1998). Most cancers are generally treated with surgery, radiation therapy or chemotherapy as a single modality or a combination treatment. All these treatment modalities are complementary and equally important in the management of the disease. The carcinomas and sarcomas, which account for 80 to 90% of all malignancies, are primarily treated with surgery and radiotherapy and in some common carcinomas such as breast; chemotherapy and hormone therapy is also given as an adjuvant. For the haemato-lymphoid malignancies, which account for 10-20% of all malignancies, chemotherapy is the mainstay of treatment and this is supplemented with radiotherapy in some cases. Overall Radiation

Table 2 Estimated number of new tobacco-related cancers[@] in India

	1985 [#]	1990 [#]	1992 ⁺	2001 ⁺
Males	113,477	130,848	136,900	157,000
Females	48,983	50,498	59,200	78,000
Total	162,460	181,346	196,100	235,000
% Of all sites	30%	27%	30%	29%

[@] Includes: Oral cavity, Pharynx, Oesophagus, Larynx and Lung.

Source: [#] IARC web site www.iarc.fr (updated 9.9.1998) (Estimates based on regional cancer registries)

⁺ National cancer Registry Programme, Biennial Report, 1988-89, Indian Council of Medical Research (1992).

therapy continues to shoulder a large burden of the total cancer load being used for the curative as well as palliative treatment of carcinomas, sarcomas and haemato-lymphoid malignancies. Approximately 40% of cancer patients are treated with radiation therapy alone and another 20% receive radiotherapy as part of the multimodality treatment. Presently radiotherapy facilities are available in 177 centers: There are 289 teletherapy units: 09 Caesium-137 units, 252 Cobalt-60 units and 37 Linear Accelerators. Brachytherapy facilities are available in 112 centres with remote low dose rate in 37, remote high dose rate in 42, manual intracavitary in 76 and manual interstitial in 27 centres. Similarly, the facilities for surgery and chemotherapy are inadequate. A survey in the year 1987 showed that there were only 3167 hospital beds specifically allocated for cancer patients in India (Health Information India, 1989). To the best of our knowledge such a survey has not been repeated recently. Unlike radiotherapy, these treatments are available not only at cancer centers or oncology wings of medical colleges but also in the surgery, ENT, medicine, gynaecology or other departments of most medical colleges; private hospitals and even nursing homes where no specific beds are allocated for cancer patients. This makes it difficult to estimate the overall facilities and beds available for cancer surgery and chemotherapy at present in our country.

Human Resources, Education and Training

It is not possible to deliver optimal cancer care without a team of well trained and qualified Surgical, Radiation and Medical Oncologists; Medical Physicists; Radiotherapy Technicians; Cytologists and Pathologists; Nurses and Medical Social Workers.

While the early pioneers of Radiation Oncology in India were mostly trained in the U.K, post graduate training leading to a M.D. exclusively in Radiotherapy was initiated in many centers in the early 1970s (Gupta 1996). Now there are approximately 600 qualified Radiation Oncologists practicing in our country. The practice of radiotherapy is permitted only for qualified oncologists (MD, DNB, DMRT or FRCR in radiotherapy or clinical oncology). In contrast the number of general and other surgeons doing

cancer surgery and physicians, radiation oncologists and surgeons giving chemotherapy in public and private hospitals or nursing homes may outnumber the qualified Surgical Oncologists (MCh or appropriate training) and Medical Oncologists (DM or appropriate training) in our country. Thus it is very difficult to estimate the number of doctors doing cancer surgery or giving cancer chemotherapy and their training background, qualifications, facilities etc.

Bhabha Atomic Research Centre (BARC) has been doing a commendable job by imparting high quality training to Medical Physicists leading to a Diploma in Radiation Physics (Dip RP). Training for the Radiotherapy technicians is not so centralized and presently only 8 institutions and universities are conducting certification courses for radiotherapy technicians (NCCP 1997).

National Cancer Control Programme (NCCP)

The Government of India initiated NCCP in 1975 following the recommendations of the Rao Committee in 1965 and Wahi Committee in 1971. The aim of the NCCP was to reduce the incidence, morbidity and mortality of cancer. In the late seventies the emphasis of the NCCP was to equip the premier cancer centers with sophisticated treatment modalities. However it was soon realized that a greater emphasis was required for on the primary prevention of tobacco related cancers and down staging of cervical cancers besides increasing availability of quality treatment facilities. The functioning of NCCP has been handicapped by the paucity of funds. During these last 20 years there have been many changes in the implementation strategy of NCCP and many new programmes have been launched. However, the one project recommendation that has visibly borne fruit is the generation of reliable morbidity and mortality data through ICMR. To date five urban and one rural population based registries and five hospital based registries have been established under ICMR. In addition four urban and one rural registry have been funded through other sources. The data generated by these registries are of international standard and are published not only in their own reports but also in the volumes of "Cancer Incidence in Five Continents" periodically published by WHO/ IARC.

In the latest review of the working of NCCP, the 3rd Expert committee meeting on 24th July 1997 (Proceedings of the 3rd Expert Committee Meeting, NCCP, 1997) the following recommendations were made:

1. NCCP should lay greater emphasis on the prevention of common cancers. The electronic media and popular public figures should be used to disseminate this message.
2. To develop Oncology wings with radiotherapy facilities in the Government Medical Colleges in a phased manner. To select states where RCCs are not in existence. Estimated cost of the project was 5 crore (50 million) Rupees.
3. To increase the financial assistance from Rupees 1 crore to 1.5 crore for the procurement of the Telecobalt units in the Government institutions. The state government should provide the other required infrastructure. To provide 1 crore to the Registered non governmental organisations (NGOs) for Telecobalt units if 40% of outdoor and 20% of indoor patients are treated free.
4. In the 60th report of the Parliamentary Standing Committee on HRD it was recommended to have a cancer diagnostic center in each district of the country. The Committee accepted this recommendation. However due to the paucity of funds it was suggested to cover all districts in a phased manner.
5. District cancer control committees and State cancer control boards to be set up. These should evaluate and monitor the activities of NGOs.
6. Financial assistance of Rs. 75 Lakhs to RCCs for purchase of equipment and conducting research

activities. RCCs that are not well developed should be developed to a basic standard.

7. Emphasis on the downstaging of cancer using methods appropriate for our health care set up.
8. Improve the palliative care services and make narcotic analgesics easily available to terminally ill patients.
9. The committee felt that the allocation of Rs. 20 crore for the year 1997-98 was inadequate and should be increased in the future to implement the guidelines of NCCP.

Government Spending for Cancer

The Government spending for cancer is primarily through the NCCP. The financial allocations for NCCP for the 6th, 7th and 8th Five Year Plans were only 11.5, 20 and 80 crores respectively.

The government spending for cancer in the year 1981-82 was 2.85 crores which was only 2.39% of Central government expenditure on health services and 0.73% of the total health sector outlay (NCCP, 1997). More recent trends in government allocation for various programmes of NCCP is shown in table 3. If one takes into account the enormous cancer burden in the country it becomes evident that the present funding is inadequate for a major preventive campaign and providing good quality treatment to all cancer patients.

The Existing Gap in the Resources, Equipment and Manpower

So far we have shown data about the enormous cancer burden and the existing equipment and manpower for the diagnosis and treatment of these patients. In contrast to 3 - 8 megavoltage radiotherapy units per million population in the

Table 3 Trends in the Financial Allocation for the National Cancer Control Project (Figures in 1,00,000s Rupees i.e lakhs)

	1992-3	1993-4	1994-5	1995-6
Grant in aid to Regional Cancer Centers	1064	890	575	413
Assistance to Radiotherapy Centers	215	500	288	1500
Assistance to District Projects	85	55	704	1421
Development of Oncology wings	950	530	38	90
Voluntary Organizations for Health Education and Early Detection	44	15	95	38
TOTAL	2358	1990	1700	3462

Source: National Cancer Control Programme, Directorate General of Health Services Publication, 1997

western countries, there are only 0.24 radiotherapy units/million population in India. In 1995 there were only 207 teletherapy units in India and it is estimated that 900 such units will be needed by the year 2000. Also there is a huge gap between the existing number and the requirement for oncologists, physicists and technicians (Dinshaw 1996).

In a survey of 118 institutions, only 153 (24%) of the total 634 radiotherapy technicians were fulfilling the AERB qualification requirement (NCCP, 1997). For the successful outcome of the cancer prevention and downstaging efforts the available medical and paramedical staff is also inadequate.

Goals Of 'Point' Next Millenium

1. Unravel the Mystery of Cancer Biology

Better understanding of the underlying biology often leads to refinements in the therapy of cancer. Indian scientists and oncologists only will have to unravel the biology of cancers such as gingivo buccal cancers that are peculiar to our subcontinent. We should not expect any major leads regarding the biology of these cancers from the western world as these cancers are very uncommon there. Clinical research on the cancers commonly occurring in the country as well as basic research in cell biology needs to be undertaken. At the Tata Memorial Centre various such studies are in progress, in particular studies of genomic instability, activation and amplification of oncogenes of myc and ras families, epidermal growth factor and tumour suppressor gene p53; have been carried out with respect to oral cancers (Saranath, 2000). Research in to the role of human papiloma virus and p53 in the causation and progression of cervical cancers is also being undertaken. Among the implied promises to elucidate the whole range of somatic mutations in cancer cell, such as the tumour suppressor gene (like p53) or proto-oncogenes, is that this information will aid in detecting cancer at earlier stages, as well as yield more specific diagnostic and prognostic criteria than those currently offered by histopathological analysis or clinical staging, and also predict responses to various therapies - such as chemotherapy or radiotherapy. It is sad to note that in the year 1996 of the

1,11,951 indexed publications in cancer and related topics from the whole world, there were only 777 (0.69%) from India. (table 4).

2. Reduce the Incidence of Cancer

As shown earlier, the age adjusted total cancer incidence rate has decreased in the Bombay region. But this is not yet obvious in other regions. It is however best to prevent any cancer by promoting healthier lifestyle as has been demonstrated for tobacco and oral cancer in an educational intervention trial (Gupta 1995). In some situations primary prevention may not be feasible then efforts need to be made to detect the disease in its earliest stage i.e. down staging. The strategies for population screening employed in the west are not suitable for our country It has been demonstrated in a rural setting that simply through increasing awareness it is possible to downstage cervical cancer (Jayant 1995). At the Tata Memorial Hospital, other avenues such as utilization of trained health workers who go in the community and examine the women in their own setting, is being explored to downstage cervical and breast cancer in Mumbai city in a randomized intervention trial where the women in the non intervention arm receive only a health talk. Another trial is also being undertaken in a rural setting to evaluate the performance of visual inspection after application of acetic acid, HPV testing and cervical cytology in determination of high grade cervical intra epithelial lesions and prevention of invasive cervical cancers.

Table 4 Publication Trends in Oncology*

Year	Total Publications Globally	Publications From India
1985 & 1986	1,42,754	632 (0.44%)
1987 & 1988	1,38,598	766 (0.55%)
1989 & 1990	1,63,278	1077 (0.65%)
1991 & 1992	1,75,828	1281 (0.72%)
1993 & 1994	2,05,891	1414 (0.68%)
1995 & 1996	2,19,325	1540 (0.70%)

Source: CANCER CD, Comprehensive Data Base of Cancer related records from CANCERLIT, EMBASE, NCI & NLM.

3. Reduce the Cancer Mortality

Reduction of the cancer mortality rates should be one of the main endpoint of any cancer control programme. Maximum impact on the cancer mortality rates can be achieved by a combination of lowering the incidence rates, early detection and improving the efficacy of the treatment. Unfortunately we do not have very reliable estimates of the long term trends in cancer mortality. This is not surprising as in a survey during 1980 to 1984 it was found that only 16% of the total registered deaths in India were medically certified, which is useful for ascertaining the cause of death. (Health Information India, 1989). Just as NCCP started the programme of generating reliable data on the cancer incidence from various parts of the country, efforts are now required to obtain reliable data on cancer mortality rates. This information would help to assess whether the preventive programmes and therapeutic efforts are having any impact, by way of translation into lower mortality rates.

4. Make Cancer Treatment more Effective, Simpler and Safer

In the past 50 years refinements in the surgical and radiation equipment and techniques and the availability of newer cytotoxic drugs have certainly improved the survival rates for most cancers. However, it seems that we have now reached a plateau and most of the cancers that have already metastasized at the time of diagnosis are not cured by the conventional treatments (Tannock 1998). There is a need to critically review the current treatment strategies and search for new paradigms.

Also the present treatments are becoming more complicated in an effort to reduce the treatment related morbidity and improve the cure rate. A simple, safe and highly effective treatment approach is still elusive, but this should remain the primary goal of all oncologists. With increasing complexity of the treatment one has to appreciate the inherent risks and devise guidelines for risk management (Risk management in Clinical Oncology 1995).

5. Alleviate the Human Suffering from Cancer

The immense physical, psychological, social and financial distress caused by this disease and its treatment is often lost in the statistics of cancer

incidence and mortality and stories of treatment success. However, for the patients who succumb soon to this disease what really matters is the quality of life during and after treatment and in the terminal stages. Quality of life measurement tools developed for the western population are not applicable here due to the differences in the social and psychological attitudes. It is therefore important that we develop and validate quality of life measurement tools appropriate for Indian population. It is heartening to note that NCCP has always acknowledged the need for pain relief and is working for the wider availability of narcotic analgesics.

6. Lower the Cost of Treatment

Despite our best efforts, millions of Indians will develop cancer and require modern treatment. With increasing complexity of surgical and radiotherapeutic treatment and newer drugs, the cost of treatment is also increasing. The treatment cost for the diseases like cancer, which affects millions of Indians across all socio-economic classes should be such that the government can support it or it is affordable for the common man. Otherwise the spiraling cost of treatment will negate the benefits of early detection campaigns.

Results from a Survey (Indian Council of Medical Research Annual Report, 1994-95) indicate that patients developing cancer due to tobacco use spend on an average Rs. 17,799/- for the diagnosis and treatment of their cancers. This preliminary data suggests that the government spends Rs. 7,861/- on the radiotherapy of a patient suffering from a tobacco related cancer, out of which the patient on an average paid only Rs. 750/- to the treating cancer centre. There is therefore a need to do a detailed evaluation of the health economics and see what treatment approaches the government can support.

Conclusion

In conclusion it appears that while the cancer incidence rate in our country is low, the total cancer burden is large. There is a huge gap between the existing treatment facilities for cancer and the actual requirements. The National Cancer Control Programme of India has had only a limited success so far and vigorous efforts are now needed to avoid a crisis situation.

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