Jpn J Clin Oncol 2002;32(Supplement 1)S13–S16

Cancer Control Efforts in the Indian Subcontinent

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Received February 23, 2001; accepted October 1, 2001

The Indian subcontinent in South Asia occupies 2.4% of the world land mass and is home to 16.5% of the world population. At present, it is roughly estimated that ~1 million new cancer cases per annum will be recorded and at any given time there will be 3 million cancer patients in India. Nevertheless, cancer is not a frequent disease for the Indian population. Cancer statistics demonstrate that cancers frequently observed in India are lifestyle dependent, with offending factors such as tobacco usage, low socio-economic status, multiple pregnancies and poor sexual hygiene. These factors are closely related to the population living in rural surroundings and they are targets for cancer prevention. Low socio-economic status and low literacy rates ensure that most patients are diagnosed at an advanced stage of the disease. It is very difficult for these patients to achieve a cure and they are always treated by palliative care with much cost and morbidity. Therefore, it is reasonable to postulate that the strategy for cancer control in India should be focused on health education for the rural population and the creation of an infrastructure for cancer management. These systems with appropriate low-cost technology might be able to be duplicated as a model for developing countries with low capital inputs.

Key words: India – cancer control – developing countries

INTRODUCTION

India has a population of about 1 billion, which corresponds to 16.5% of the world population. Although cancer is not at present a very frequent disease for the Indian population, increasing longevity ensures that the number of cancer patients will increase proportionately in the coming decades.

India is a vast rural panorama with 70% of the population residing in villages in rural surroundings. Cancer statistics demonstrate that cancers frequently observed in India are lifestyle dependent, with offending factors such as tobacco usage, low socio-economic status, multiple pregnancies and poor sexual hygiene (1). These factors are closely related to the population living in rural surroundings and they are targets for cancer prevention. Low socio-economic status and low literacy rates ensure that most patients are diagnosed at an advanced stage of the disease. It is very difficult for these patients to achieve cure and they are always provided with only palliative care with much cost and morbidity. These facts indicate that the strategy for cancer control in India should be focused on health education for the rural population and the creation of an infrastructure for cancer management. The latter is expected to function more efficiently in a rural environment. These systems with appropriate low-cost technology might be able to be duplicated as a model for developing countries with low capital inputs.

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CANCER STATISTICS

Cancer registry data are not always accurate and not precise in large countries such as India. Only six population-based registries are functioning for a population of 1 billion. Table 1 demonstrates the age-adjusted incidence rates at 10 leading cancer sites derived from the population-based cancer registry in Bombay in 1997 (2). To reinforce the population-based registry, hospital-based cancer registry data play important roles and they provide valuable information for planning effective strategies for cancer control. The data given in Table 2 are from the Tata Memorial Centre on the west coast of India, representing the 10 leading sites of cancer in 1996. These statistics indicate that cancers frequently observed in India are lifestyle dependent. In males, they are tobacco-related cancers, including cancers of the oral cavity, pharynx, larynx, esophagus and lung. In females, the incidence of cervical cancer is high, probably owing to poor sexual hygiene, multiple pregnancies and early age at marriage.

HEALTH CARE FACILITIES IN INDIA

In India, health care facilities consist mainly of two components: those sponsored by the state or the government and the others belonging to the private or corporate sector.

Table 1. Age-standardized incidence rates (adjusted to world population)[a] per 100 000 at 10 leading cancer sites derived from the population-based cancer registry in Bombay in 1997 (2)

Male		Female	
Site	Rate per 100 000	Site	Rate per 100 000
Lung	10.7	Breast	28.1
Oesophagus	7.3	Cervix	17.1
Prostate	6.8	Ovary	8.2
Larynx	6.2	Oesophagus	6.2
Stomach	5.5	Lung	4.5
Tongue	5.5	Leukaemias	3.6
Lymphomas	4.8	Stomach	3.5
Hypopharynx	4.5	Uterus	3.4
Liver	4.4	Lymphomas	3.4
Leukaemias	4.3	Colon	2.7

[a]Age-standardized rates are adjusted to the world population: between ages 0 and 74 years as suggested by the WHO for calculation.

Table 2. Ten leading sites of cancer in males and females derived from cancer registry of Tata Memorial Hospital (1996)

Males			Females		
Site	No. of patients	% of total	Site	No. of patients	% of total
Leukaemia	589	7.3	Breast	1680	26.5
Lung & bronchus	547	6.8	Cervix	1370	21.6
Oesophagus	544	6.8	Ovary	327	5.1
Pyriform	530	6.6	Oesophagus	275	4.3
Buccal mucosa	497	6.2	Leukaemia	249	3.9
Malignant lymphoma	407	5.0	Buccal mucosa	181	2.8
Base tongue	315	3.9	Thyroid	155	2.4
Anterior tongue	268	3.3	Malignant lymphoma	133	2.1
S.G. larynx	251	3.1	Lung & bronchus	130	2.0
Urinary bladder	221	2.7	Anterior tongue	125	2.0
Total	8057	100.0	Total	6345	100.0

State/Government Sponsored

In the overall political scene in India, policies for health promotion and education are unfortunately accorded a low priority; nonetheless, the Ministry of Health provides health care efforts in the state by supporting large teaching hospitals, dispensaries and small clinics in the smaller towns and rural areas. Primary health care workers and many of the dispensaries and small clinics are involved in preventive immunization and other basic health matters. Nearly 95% of the population in the rural area, 70% in smaller towns and 50% in the major cities avail themselves of these state-sponsored health care facilities with low cost or free of cost.

Cancer treatment facilities supported totally by the government are available in major cities such as Delhi, although totally inadequate for the needs. The Tata Memorial Centre, the largest comprehensive cancer centre in Bombay, is supported totally by the Department of Atomic Energy, Government of India. Many of these institutional facilities are available at low cost or no cost for the poor and in a private capacity for those who can afford it.

The Government of India also supports some of the regional cancer centres present across the country by a small amount of annual funding. It would be fair to state that despite financial restraints, the state and the government are aware of the increasing cancer problem and are trying their best to allocate a reasonable part of the budget for health to cancer control efforts.

Private/Corporate Sector

The increasingly expensive technology for the diagnosis and treatment of cancer and the possibility of profits in professionally run hospitals have led a large number of private general hospitals and specialized cancer hospitals to become involved in cancer care in the private sector. Most such facilities exist in large metropolitan cities and a few in larger towns. Needless to say, the demand far outstrips the supply and many more cancer facilities need to be created to care for the increasing number of cancer patients in coming decades.

A significant number of private cancer societies exist in various states which are mainly concerned with public education and creating cancer awareness. These societies depend on private and public philanthropy for their sustenance.

MULTIDIMENSIONAL APPROACH TO CANCER CONTROL: CREATING A MODULE SUITABLE FOR DEVELOPING COUNTRIES

The control of cancer does not consist merely of diagnosis and effective treatment. In order to achieve any health care objective, it is necessary to identify the fundamentals. Cancer control is a summation of many different components, the most important of which are basic research, prevention and epidemiology, cancer registry database, public and professional education, facilities for screening high-risk patients, early diagnosis, effective treatment modules and rehabilitation programmes. Not many centres can have all these facilities even in metropolitan areas.

In the current global economic scenario, it is prohibitively expensive to envisage and create such a comprehensive complex, particularly in developing countries. It is therefore incumbent upon every existing major comprehensive centre to act as a catalyst to disseminate information and knowledge by a process of intensive interactive coordination with smaller cancer centres in the larger towns and small cancer units in the rural areas. Here the author presents his experience with such an interaction and considers how successful one can be if the

planning strategy is appropriate. Essentially these are satellite outreach programmes coordinated and overseen or supervised by a comprehensive cancer centre functioning in the metropolitan areas.

CREATION OF COMMUNITY MODULES FOR EFFECTIVE TREATMENT AND REHABILITATION

A major experiment was initiated in 1982 under the aegis of the Tata Memorial Centre to create a rural community module for cancer care which could be replicated for any developing country with resource restraints. It involved a phased and gradual stepwise programme over a period of years. Currently, 20 years after the initiation of the project, this outreach satellite centre is serving the needs of the population, has strongly promoted cancer education and has become a major self-supporting centre for cancer control. The important components of the project are as follows:

1. Initiation of an out-patient department with minimal diagnostic facilities such as clinical examination, routine radiology and routine laboratory.
2. Intensive public education, particularly about prevention and early diagnosis, and identifying high-risk populations.
3. Spreading cancer knowledge through camps and by mobile vans.
4. Creating facilities for treatment with surgery, radiotherapy and chemotherapy.
5. Introducing more sophisticated diagnostic facilities of imaging diagnosis and advanced laboratory tests.
6. Initiation of rural cancer registry and division of epidemiology.
7. Organizing fully fledged facilities for radiotherapy, chemotherapy and advanced surgical techniques.
8. Data collection proving that downstaging of cervical and head and neck cancers could be achieved. This was possible 11 years after the initiation of the project and was published in 1994 (3,4).

Apart from the catalytic action of the Tata Memorial Centre through professional and advisory inputs, the most important contributory factor for the success of this project has been effective public education, which has led to awareness and gradually increasing compliance of the population. The WHO has taken note of this module as a model, which can be implemented at a low cost with appropriate technology. This experiment has proved that a separate vertical programme for specific disease control is more likely to succeed than dovetailing multiple health care programmes in a single project.

CHALLENGES AND OPPORTUNITIES FOR CATALYTIC ACTION BY MAJOR CENTRES

While large, comprehensive cancer centres in major metropolitan areas are imperative for fundamental and basic research, professional education and primary, secondary and tertiary cancer treatments and rehabilitation, it cannot make a major impact on cancer control unless it addresses the problems of the larger number of cancer patients who cannot reach metropolitan areas. This poses a major challenge and an opportunity for the comprehensive centres to act as a catalytic agent to organize outreach programmes/projects in rural and semi-urban areas where it can reach out to the population in their own environment. Much medical capability resides beyond the confines of the universities and formal institutions of learning and the latter must take it upon themselves to disseminate their knowledge and expertise to large areas in the hinterlands.

Appropriate identification of human resources is the most important factor in the success of such endeavours and the author has proved the validity of this concept in India. Organization of technology transfer programmes in various oncology disciplines across the country, acting as a centre for professional cancer education, organization of divisions of preventive oncology over and above their functions of basic and clinical research and state of the art therapy are the hallmarks of a large, comprehensive cancer centre. The catalytic actions of such a centre, as described, will make a significant contribution to the overall cancer control effort in any part of the world.

FUTURE DIRECTIONS

Increasingly, the longevity of the global population in general and Asia in particular ensures a rising incidence and frequency of cancer. Increasing public awareness and improved technology for early diagnosis will also add to the number who will develop cancer in the coming years. Although 60% of cancers are preventable, the impact of this knowledge in reducing the cancer load will take a long time. While current technology has the wherewithal to diagnose cancer early to prevent morbidity and mortality, it is difficult to implement this without positive political and philanthropic support to scientists, doctors and paramedical workers. Screening programmes for early detection including mammography, chest X-rays and Pap smears are worthwhile only in high-risk populations, which are now well defined. Routine cancer detection centres for the normal population are a thing of a past era and have not stood the test of time.

The main need in the coming decades is education: education about prudence in lifestyles and diets; education about symptomatology of early cancer; education about availability of screening programmes for the high-risk population; and education about the fact that early diagnosis and appropriate treatment are compatible with long-term cancer-free survival with minimum morbidity. In essence, no cancer control effort can be mounted without education at all levels – public and professional.

The need of the coming decades is not huge, comprehensive cancer centres, but small community cancer centres, which are cost effective and can manage most cancer patients in their own environment. Currently, 50% of cancers are curable if detected early, 25% can be effectively palliated by treatment even in an advanced stage and for the remaining 25% good pal-

liative care and pain relief can be achieved. In the new millennium, if appropriate steps are taken to address the problem in a pragmatic manner, by 2020, two-thirds of cancers could be cured and only 5% of patients will need terminal care. These figures are based on demographic estimates, which have proved that cancer death rates are steadily declining in countries where appropriate strategies have been implemented (5,6).

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