
Overview of Cancer in Malaysia

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Received September 11, 2000; accepted May 17, 2001

The problem of cancer in Malaysia is a growing one. It is now the fourth leading cause of death among medically certified deaths. Cancer of the lung is the most common killer among malignancies. It is estimated that the annual incidence of cancer is 30 000. The majority of patients are found at a late stage of the disease. The National Cancer Control Program aims to reduce the incidence and mortality of cancer and to improve the quality of life of cancer patients. Policies encompass prevention, early diagnosis, treatment, palliative care and rehabilitation. The program for prevention includes an anti-smoking campaign and immunization of babies against hepatitis B. Papanicolaou's smear and breast self-examination are among efforts for the early detection of cancer. Public education and the promotion of healthy lifestyles have been actively carried out. Facilities for treatment and palliative care are being developed further. Networks between the public and private sectors and non-governmental organizations have been ongoing. Apart from the establishment and upgrading of treatment facilities, the need for training of skilled staff in the treatment of cancer is highlighted.

Key words: Malaysia – cancer – control program

INTRODUCTION

Cancer is one of the major health problems in Malaysia. This disease has become increasingly important as a public health concern with the development and progress that has been achieved in this country. For instance, the impact of infectious diseases has decreased with the advent of the widespread supply of clean water and sanitation facilities.

BURDEN OF CANCER

In the absence of a nationwide population-based cancer registry, the burden of cancer can only be estimated by extrapolating from regional surveys. In a regional population-based cancer registry survey carried out between 1988 and 1990 (1), the incidence rates for males and females were 56.3 and 56.9 per 100 000, respectively. This was probably an underestimate, as another regional cancer registry survey carried out in Penang in 1994 demonstrated that the age standardized incidence rate for all cancers was 115.9 per 100 000 for males and 119.7 per 100 000 for females (2). As under-reporting is known to be a significant problem in such surveys, the likely estimate is probably closer to 150 per 100 000. The annual incidence of cancer in Malaysia has been estimated to be 30 000 (3). The

prevalence of cancer was estimated to be approximately 90 000. In 1998, Malaysia's population was 21.4 million, of whom 4% were aged 65 years and above. The incidence of cancer is expected to rise with an increase in aging population. The proportion aged more than 60 years was 4.6% in 1957, increased to 5.7% in 1990 and is projected to be 9.8% in 2020 (4).

Efforts to estimate the burden of cancer through death certificates were hampered by the fact that the percentages of deaths that were medically certified and inspected have remained around only 30–40% in the last four decades (4). Cancer constitutes 10.3% of medically certified deaths, which is the fourth leading cause of death (Table 1) (5). The proportion of deaths due to cancer would very likely be higher if all deaths had been medically certified.

In a regional cancer registry survey (1), the 10 leading cancers among males were lung, nasopharynx, stomach, urinary bladder, rectum, non-Hodgkin's lymphoma, larynx, liver, colon and esophagus and in females cervix, breast, ovary, lung, nasopharynx, esophagus, thyroid, colon, rectum and non-Hodgkin's lymphoma.

In a national childhood cancer survey, the commonest childhood tumors were leukemias, tumors of the brain and spinal cord, lymphomas, neuroblastoma, gonadal and germ cell tumors, kidney tumors, soft tissue sarcomas and retinoblastomas (Table 2) (6). The crude incidence rate of pediatric malignancies in Malaysia was 77.4 per million children aged less than 15 years (6).

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Table 1. Statistics for Malaysia, 1998 (5)

Total population	21 446 031
Males	10 877 024
Females	10 569 007
Medically certified deaths	43 514
Uncertified deaths	54 392
Percentage of medically certified deaths	44.4%
Common causes of medically certified deaths:	
Diseases of the circulatory system other than cerebrovascular disease	8848
Accidents, poisonings and violence	6564
Diseases of the respiratory system	4573
Malignant neoplasms	4498
Cerebrovascular disease	3367
Septicemia	2923
Others	12 741
Total	43 514

Among cancer deaths in 1998, the commonest diagnoses were lung, liver, breast, leukemia, stomach, colon, nasopharynx, cervix, lymphoid tissues and ovary (Table 3) (5).

The burden of cancer was also reflected in the length of stay of patients in hospitals. In a 1995 retrospective hospital-based study of cancer admissions in a general hospital in Penang, the average length of hospital stay for cancer patients was 12.7 days (range: 1–130 days), accounting for a significant proportion of the inpatient workload of a general hospital (7). Similarly, in the Department of Radiotherapy and Oncology of Hospital Kuala Lumpur, the average length of hospital stay was 11.4 days. By comparison, the average length of ward stay in the same year in the whole of Hospital Kuala Lumpur was 5.2 days (8).

Cancers with racial differences in incidence include nasopharyngeal cancer and oral cavity cancer. In a regional cancer registry survey (2), the incidence of nasopharyngeal cancer in males by race was 0.79 per 100 000 in Malays, 15.9 per 100 000 in Chinese and 1.1 per 100 000 in Indians while the corresponding incidence in females was 0.8, 4.1 and 0 per 100 000, respectively.

Efforts have been made regarding the re-establishment of a national Cancer Registry. Owing to current limitations, the Cancer Registry is being developed on a regional basis.

Common cancers in Malaysia in which early diagnosis is possible and effective treatment is available include breast, nasopharyngeal and oral cavity cancers. Down-staging of cancer would automatically yield better results in cancer control. However, delay in diagnosis is common owing to factors such as frequent reliance on unorthodox medical remedies at initial presentation (9). Among cancer patients admitted to Penang hospital in 1995, 60% were in stages III–IV (7). In Kuala Lumpur, 80% of patients with cervix cancer presented at stages IIB–IV (10). In Sarawak, the proportion of patients with carci-

Table 2. Common childhood cancers in Malaysia (rate per million) (6)

Leukemias	35.0
Tumors of the brain and spinal cord	13.9
Lymphomas	5.8
Neuroblastoma	4.9
Gonadal and germ cell tumor	4.1
Kidney	4.0
Soft tissue sarcomas	3.7
Retinoblastoma	3.6

Table 3. Causes of death due to cancer among medically certified deaths in Malaysia in 1998 (number/% of medically certified deaths) (5)

1	Lung	941 (20.9)
2	Liver	431 (9.6)
3	Breast	342 (7.6)
4	Leukemia	311 (6.9)
5	Stomach	266 (5.9)
6	Colon	239 (5.3)
7	Nasopharynx	217 (4.8)
8	Cervix	177 (4.0)
9	Lymphoid	163 (3.6)
10	Ovary	122 (2.7)
11	Others	1289 (28.7)
Total		4498 (100.0)

noma of the cervix who presented with stages I and IIa was only 26.3%, the most common stage at presentation being stage III (36.2%) (11). In a study of patients with colorectal cancer in the Institute of Radiotherapy and Oncology, only 28.5% had disease that was staged as Dukes' A or B (12). In analyses of patients with tongue cancer (13) and prostate cancer (14), the majority had presented with advanced disease.

NATIONAL CANCER CONTROL PROGRAM

The aims of the National Cancer Control Program are to reduce the incidence and mortality due to cancer and to improve the quality of life of cancer patients. Emphasis was placed on the optimum utilization of available resources, appropriate use of technology and active community participation. Key points include the development of National Cancer Policies, political commitment, accessibility of complete and reliable data on cancer, appropriate dissemination of cancer information to the public, strengthening of the existing preventive measures, screening and early diagnosis of cancer, prompt and effective cancer management, rehabilitation, inter-agency cooperation, active community participation, appropriate training program and research in cancer. Policies that have been developed in the National Cancer Control Program include those on prevention, early diagnosis, relief of pain, palliation of the terminally

ill and legislative changes, such as in the control of tobacco use (15).

As in other countries, smoking constitutes one of the most preventable causes of cancer and other diseases in Malaysia. A review of patients with carcinoma of the lung seen in a university hospital in Kelantan (16) demonstrated that 75% of the patients were smokers and the majority of patients were between the ages of 41 and 70 years. At least one-third of all cancers are preventable, the most notable being malignancies of the lung, oral cavity and liver. Thus anti-smoking campaigns (see below) and vaccination of babies against hepatitis B should be important priorities. The immunization coverage of infants (Third Dose) against hepatitis B in 1996 was about 90%.

The anti-smoking campaign is one of the important strategies of the National Cancer Control Program. However, much more work needs to be done in this area. Despite efforts aimed at discouraging smoking, the prevalence of continuing smokers was 30.6% in the general population. The prevalence is highest among Malays (34.4%) and other indigenous groups (37.9%). There was a higher proportion of smokers among males (59.7%) than females (5.1%) (17). It has been shown that the prevalence of adolescent smoking in Malaysia was 16.7%. Although 43.5% quit attempts were recorded among current adult smokers in the previous 1-year period, the quit ratio was only 18.3% (quit ratio was defined as the ratio of the prevalence of ex-smokers to the prevalence of continuing smokers). Hence prevention programs need to be given more prominence. The national mean starting age was 19.9 years. Further emphasis should also be given to campaigns in school children, 'Quit Smoking Clinics' and a review of laws, such as laws concerning the minimum age for buying tobacco products.

Early detection of cancer is being attempted through public education. In Sarawak, where the commonest cancers are of the nasopharynx, breast and cervix and advanced stages at presentation are found in at least 70% of the cases (18), additional efforts at early detection have been carried out. Allied health professionals in the rural areas (medical assistants, nurses) are trained in the detection of early signs and symptoms of cancers of the nasopharynx, breast and cervix. Positive outcomes can be expected in terms of down-staging of the common cancers, thereby increasing the chances of cure or long-term control.

Although the program for early cervical cancer detection using Papanicolaou's smear (Pap smear) was introduced about three decades ago, the overall prevalence of the Pap smear in a community survey was only 26% (17). Significantly lower rates were found in unemployed women and women working in the agricultural sector. Whilst 74.8% of the women who had been examined did their Pap smears within the prescribed interval of 3 years, this interval was not followed by many older and uneducated women. Women of reproductive age had higher rates for Pap smear than older women and a sudden decline was noted at age 50 years (17). Hence disadvantaged groups of the population must continue to be given adequate

emphasis and priority in screening programs. Strategies have to be streamlined to capture women outside the reproductive age group with further development of screening services that are easily available. One of the latest moves was to extend the target age group from 35–65 years to 20–65 years.

The overall prevalence of breast self-examination is 46.8% (17). The screening rate by breast self-examination was 34.1%, followed closely by health worker examination (31.1%). Mammography was carried out in only 3.8% of women. Lower rates were found among rural women, while married women had a significantly higher screening rate than the other marital categories of women. Screening rates were higher among those aged 20–49 years. Health education programs have to target the population subgroups that would benefit from screening, including women in the older age groups. One strategy would be to encourage both Pap smears and breast self-examinations to be done simultaneously. Mammography as a population-based screening procedure for breast cancer is not a policy in Malaysia as its value is expected to be negligible with the limited resources at present.

Public education, the promotion of healthy lifestyles and wellbeing programs are to be given further emphasis with the development and implementation of information technology and telemedicine. These programs could be available as generic health information or as personalized health information to individuals based on their individual health records. With a population that is both knowledgeable and motivated, the incidence of cancer and its attendant morbidity and mortality should be reduced. This policy is in line with the country's vision of being a nation of healthy individuals, families and communities through the promotion of individual responsibility and community participation towards an enhanced quality of life. Thus, it is hoped that the incidence, morbidity and mortality of diseases such as cancer will be decreased while the cost of the country's health care may be contained within reasonable limits.

TREATMENT

Treatment of cancer is a multidisciplinary effort. The modalities of treatment include surgery, radiotherapy, chemotherapy, hormonal therapy, immune therapy and symptomatic and supportive therapy. There are 14 radiotherapy centers in Malaysia, with two in the Ministry of Health (MOH), three in universities and nine in the private sector. The proportion of cancer patients who seek treatment at government centers is in excess of 60% (17).

Adult hematological malignancies are treated in general hospitals by physicians. However, since the early 1980s, the general hospitals in Kuala Lumpur and Penang and three university hospitals have gradually established Clinical Hematology teams which address these malignancies. Some of these patients are followed up later by the respective state hospitals. There are hematologists in the private centers as well.

Pediatric oncology treatment (which includes the management of solid tumors as well as hematological malignancies)

has been established in University Hospital Kuala Lumpur and the Institute of Pediatrics of Hospital Kuala Lumpur. Patients requiring follow-up or maintenance treatment can be managed at the various general hospitals in the rest of the country, especially by pediatricians with a special interest in pediatric oncology.

Surgeons in the government general hospitals, medical schools and the larger private hospitals have their roles in the diagnostic, curative and palliative aspects of cancer management. Joint Cancer Clinics are set up wherever possible. Close teamwork between the surgeons, oncologists, radiologists, pathologists and other relevant disciplines improves the quality of cancer treatment for individual patients and encourages the development of management policies. A good example is the development of Breast Clinic Services.

Shortage of adequate cancer care continues to be a problem. In Malaysia, the ratio of megavoltage machines to the population is 1.2 per million (taking into account machines in both government and private sectors). The provision of basic oncological services throughout the country would continue to receive its due emphasis. Regionalization of cancer services was one of the solutions that had been proposed in overcoming the uneven distribution of services. The existing centers require upgrading from time to time with the replacement of old machines and the installation of newer machines.

Networking between the public and non-governmental sector in cancer care has been satisfactory. The Ministry of Health has been purchasing radiotherapy services from private hospitals in regions that are far away from existing government facilities.

Conventional chemotherapy is given in many general hospitals, district hospitals and private centers. Advice is obtained from oncologists during their visits to peripheral clinics or through consultations via telephone or facsimile. In the foreseeable future, advice may also be given through teleoncology. Patients' convenience and safety while undergoing chemotherapy have been enhanced by the introduction of innovative procedures, such as day care chemotherapy facilities, newer anti-emetic regimens and fully implantable venous access devices (19). High-dose chemotherapy with hematopoietic stem cell transplant is carried out by pediatric oncologists and hematologists in University Hospital Kuala Lumpur and Hospital Kuala Lumpur.

Morbidity due to the late effects of disease or treatment in patients who are cured could be minimized. The Department of Rehabilitative Medicine, as well as physiotherapists, occupational therapists, speech therapists and other professionals, play significant roles in improving the quality of life of these patients.

The relief of pain and adoption of other palliative measures that improve the quality of life of patients with advanced cancer is a priority in the National Cancer Control Program. Efforts at improving palliative care services throughout the country are being actively undertaken by governmental and non-governmental agencies. There is healthy networking

between government centers and the local non-governmental organizations involved in palliative care. Home care nursing by some government general hospitals serves to enhance the continuity of care of terminally ill patients after discharge from hospital.

Multidisciplinary effort in cancer care is essential in metastasis and advanced disease. The roles of various specialists have been recognized in different clinical situations. For instance, careful selection of patients with cord compression for surgery can be rewarding. In one local series, orthopedic surgery for spinal cord compression resulted in neurological improvement in 28% of the patients (20). Chronic pain management employing celiac plexus block with CT scanning has been performed by our anesthetic colleagues (21). The Departments of Oncology and Anesthesiology in Hospital Kuala Lumpur have jointly initiated a pain clinic. The management of chronic pain has been recognized as a multidisciplinary approach, employing pharmacological and non-pharmacological modalities (22).

Palliative care programs with palliative care units as well as hospice home care have been initiated and are being developed. The programs include the training of doctors, nurses, medical assistants and lay volunteers in the palliative care of terminally ill cancer patients. Continuity of care of patients after their discharge is carried out by medical personnel in the peripheral hospitals who have been trained in basic cancer care, as well as by adequate communication between the specialist units and peripheral health facilities.

There is still room for improvement in palliative care services in many parts of the country. For example, despite the availability of aqueous morphine, its usage in patients with advanced cancer is hampered by lack of knowledge of palliative care by the public and a proportion of medical staff. At a recent workshop organized by the World Health Organization (23), one of the conclusions was that a curriculum for palliative care should be developed as a component of any national educational initiative. Several local medical schools, postgraduate courses in family medicine and nursing colleges have introduced palliative care as part of their teaching programs. Workshops and seminars are held, while palliative care teams in hospitals are being developed.

Much has been achieved in oncology in Malaysia in the past 40 years. There are now more combined clinics, which are jointly run by oncologists and specialists from various disciplines. Improvements in radiotherapy techniques allow greater sparing of normal tissues and good palliative care is more widely available. Newer services include stereotactic radiosurgery and high dose rate remote afterloading system for brachytherapy. Telemedicine is currently being introduced in Malaysia. Teleconsultation will help to ensure that the expertise in and knowledge of the treatment of cancer are available in smaller towns. Possible uses of information technology include personalized health information delivery, patients' health records and continuing medical education.

NON-GOVERNMENTAL ORGANIZATIONS

Non-governmental organizations (NGOs) are actively involved in various aspects of cancer welfare. Examples include the National Cancer Society of Malaysia, the National Cancer Council (or MAKNA), Cancer link and Rotary Clubs. Many activities are carried out by such organizations, such as cancer education, cancer counseling services, psychological support for cancer patients, welfare services, organization of national and international symposia, providing therapeutic facilities and setting up a half-way home for pediatric oncology patients undergoing treatment. Publications by non-governmental organizations help to educate the public and patients by seeking medical attention promptly when there are early symptoms of cancer (24). There is a significant amount of goodwill in the community and the public where cancer is concerned.

Hospice organizations such as Hospice Malaysia aim to provide care and support for cancer patients who have advanced disease and are terminally ill. In addition, they are involved in home care nursing, symptom control, counseling and education of the patients' families and the public. There are currently 16 hospice organizations throughout the country, which are under an umbrella organization called the National Hospice Council.

TRAINING

The number of specialists needs to be increased in order to cope with the burden of cancer in the country. There are approximately 30 clinical oncologists (specialists in radiotherapy and oncology) who have undergone training in radiotherapy, chemotherapy and hormonal therapy. Physicians and about 20 clinical hematologists manage leukemia and other hematological malignancies. Approximately 15 pediatric oncologists and pediatricians who have a special interest and training in managing malignancies treat pediatric malignancies. There are fewer than five medical oncologists and palliative care specialists.

It cannot be overemphasized that many more oncologists, oncology nurses, medical physicists, therapy radiographers and other support staff are needed. The recent economic downturn had caused an interruption in training for some of the above groups.

RESEARCH

Research is an ongoing activity. Studies, which have been started, include mutation analysis of *BRC1* gene in breast cancer and studies on molecular epidemiology, mainly in nasopharyngeal cancer. For example, local researchers have contributed towards establishing a multistep involvement of Epstein-Barr virus in the development of nasopharyngeal cancer (25). Local cancer centers have participated in multicenter trials, such as those on novel anti-cancer drugs (26), and in studies exploring ways of decreasing the morbidity of cancer treatment, such as emesis control (27). Possible studies in the

future include investigations on herbal medicine for their anti-cancer properties and looking for new molecular targets for screening.

QUALITY ASSURANCE PROGRAM AND REGULATIONS

Efforts at implementing and establishing quality assurance programs have been ongoing. This will ensure that services to the public and patients continue to be of high quality and cost-effective, whilst striving towards improvement and excellence. Some baseline audit of practice has been carried out in the local setting, such as adjuvant chemotherapy and radiotherapy in colorectal cancer (28,29).

Steps are being taken to design and implement regulations, e.g. in the medical use of radiation. These regulations, together with the introduction of quality assurance programs, will contribute towards a further improvement in the standard of oncology services.

CONCLUSIONS

The solution to the cancer problem must involve a multiprong attack. When cancer prevention programs achieve their goals, it will certainly be the most cost-effective solution. Special attention must be given to the establishment and upgrading of treatment facilities and the training of specialized personnel.

Good and comprehensive cancer treatment is equally the right of the poor and underprivileged. Cancer care services must be accessible and affordable throughout the entire health system, from the primary care level up to the centers for tertiary care. In doing so, many lives will be saved and countless more patients will have the chance of obtaining relief from the distressing symptoms of cancer.

Acknowledgments

Thanks are due to my colleagues for their valuable comments and to the Director General of Health of Malaysia for his permission to publish this paper.

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