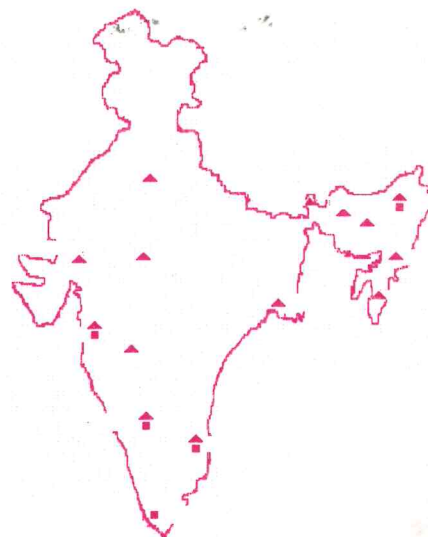


CANCER **R**EGISTRY **A**BSTRACT



NEWSLETTER, VOLUME XI NATIONAL CANCER REGISTRY PROJECT OF INDIA

**PUBLISHED BY
HOSPITAL BASED CANCER REGISTRY
REGIONAL CANCER CENTRE
THIRUVANANTHAPURAM
FOR THE
NATIONAL CANCER REGISTRY PROJECT
INDIAN COUNCIL OF MEDICAL RESEARCH**

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NEWS LETTER OF THE NATIONAL CANCER REGISTRY PROJECT

Indian Council of Medical Research, Volume XI, 2004

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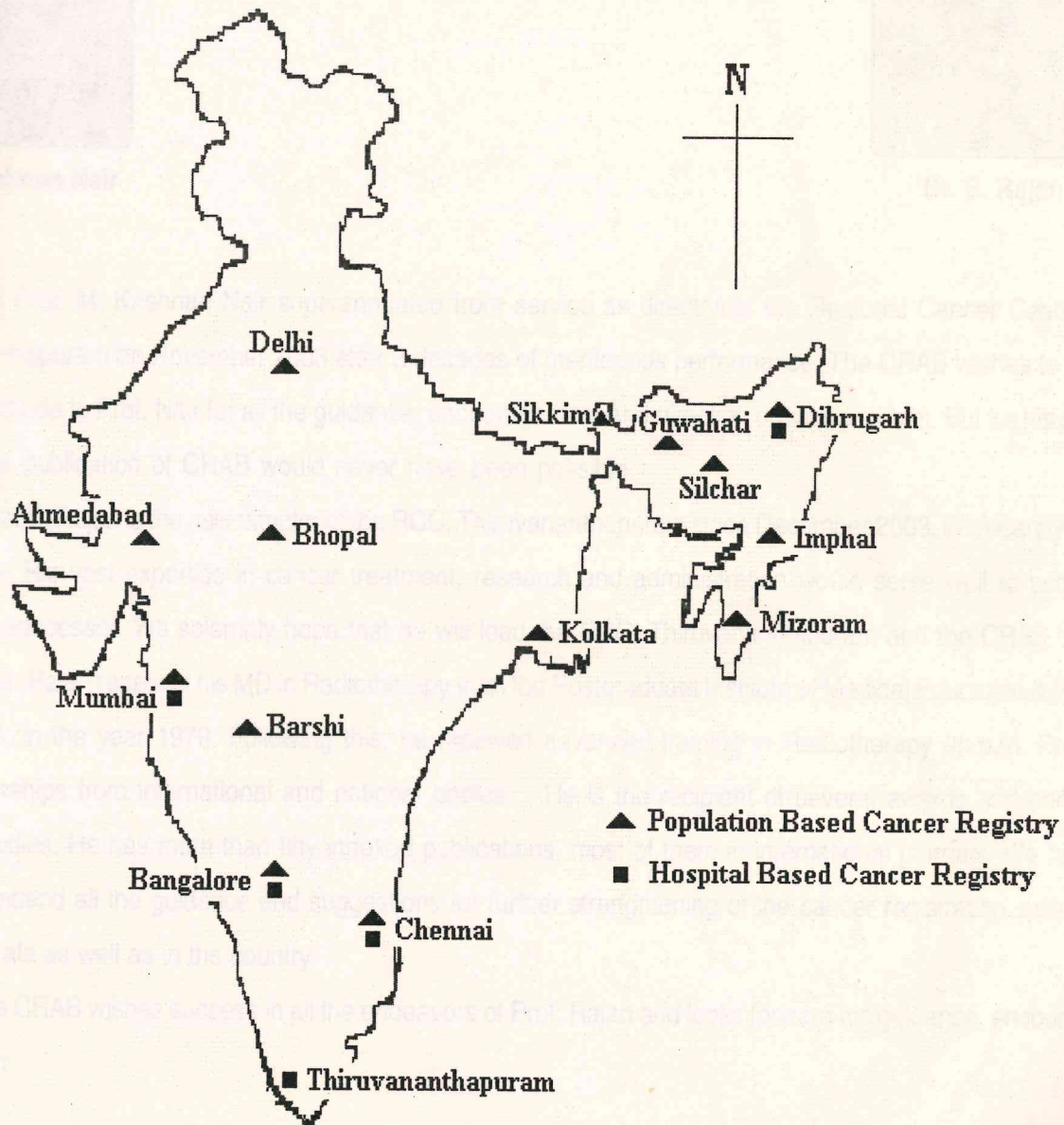
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CANCER REGISTRIES IN INDIA (2004)

Under the National Cancer Registry Project of India



Farewell to Dr. M. Krishnan Nair

*Adviser of CRAB, Principal Investigator, Hospital Based Cancer Registry & Director
Regional Cancer Centre, Thiruvananthapuram
(1982-2003)*



Dr. M. Krishnan Nair



Dr. B. Rajan

PadmaShri Prof. M. Krishnan Nair superannuated from service as director of the Regional Cancer Centre (RCC), Thiruvananthapuram on November 2003 after 3 decades of meritorious performance. The CRAB wishes to record its sincere gratitude to Prof. Nair for all the guidance, encouragement and direction provided by him. But for his continued support, the publication of CRAB would never have been possible.

Prof. B. Rajan is the new director of the RCC, Thiruvananthapuram since December 2003. We heartily welcome Prof. Rajan. His vast expertise in cancer treatment, research and administration would serve well to succeed the legendary predecessor. We solemnly hope that he will lead the RCC, Thiruvananthapuram and the CRAB to greater heights. Prof. Rajan received his MD in Radiotherapy from the Postgraduate Institute of Medical Education & Research, Chandigarh, in the year 1979. Following this, he received advanced training in Radiotherapy abroad. Prof. Rajan holds fellowships from international and national bodies. He is the recipient of several awards and honors from scientific bodies. He has more than fifty indexed publications, most of them in international journals. We hope Prof. Rajan will extend all the guidance and suggestions for further strengthening of the cancer registration system in the state of Kerala as well as in the country.

The CRAB wishes success in all the endeavors of Prof. Rajan and looks forward his guidance, encouragement and support.

Editorial Staff, CRAB

Farewell to Mr. P. Gangadharan

Editor of CRAB (1982- 2003)



Mr. P. Gangadharan, former chief of the hospital cancer registry, Regional Cancer Centre, Thiruvananthapuram and consultant, Natural Background Radiation Registry (NBRR), Karunagappally has been the editor of the newsletter cancer registry abstract (CRAB) during 1982 - 2003. He has been instrumental in raising the standard of CRAB publication over the years to a high level of acceptability. His services and contributions to the Regional Cancer Centre, Thiruvananthapuram and to the National Cancer Registry Project of the Indian Council of Medical Research at large have been incredible. I join all the staff of various cancer registries in the country to bid him farewell and wish him a very happy and prosperous life in the years to come. I am sure that he would continue to give us advice and guidelines to strengthen cancer registry operations throughout the country.

I also take this opportunity to welcome Dr. Aleyamma Mathew, Associate Professor, Chief of the cancer registry, Thiruvananthapuram as the new editor of CRAB. I wish her all success and request you all to co-operate with her to further strengthening and expanding the content and scope of CRAB publication.

Dr. B. Rajan
Director & Principal investigator
Cancer Registry, Regional Cancer Centre,
Thiruvananthapuram

EDITORIAL

Development of information system for cancer control

Cancer continues to be a major health problem worldwide despite advances in diagnosis and treatment. It has been estimated that in the year 2000, over 10 million new cases of cancer occurred and 6 million people died from cancer. Of the 10 million new cancer cases, nearly 60% were found in developing countries. Globally, the most frequently occurring cancers are lung, breast, colon, rectum, stomach and liver.

In India, the life expectancy at birth has steadily risen from 45 years in 1971 to 62 years in 1991, indicating a shift in demographic profile. It is estimated that life expectancy of Indian population will increase to 70 years by 2021. There will be a massive increase of population in the age group of 40-59 years as well as population of elderly of above 60 years. Such changes in the age structure would automatically alter the disease pattern associated with ageing and increase the burden of problems such as cancer, cardiovascular and other non-communicable diseases in the society. Urbanization, industrialization, population growth and ageing will contribute to epidemiological transition.

Population Based Cancer Registry (PBCR) is the source of data in estimating the incidence and mortality as it records all cancer cases occurring in a defined region. The Indian Cancer Society started cancer registration in India by initiating PBCR in the city of Mumbai during the year 1963. Keeping in view of the paucity of reliable data in a country with wide socio-cultural diversity, the Indian Council of Medical Research (ICMR) initiated a network of cancer registration through the National Cancer Registry Project (NCRP) in 1982 to set up cancer registries in different regions of the country. The ICMR network of registries now consists of 14 PBCR's located at Mumbai, Bangalore, Chennai, Bhopal, Delhi, Barshi, Sikkim, Guwahati, Dibrugarh, Silchar, Imphal, Mizoram, Kolkata and Ahmedabad. There are some other PBCRs in Kerala (Thiruvananthapuram and Karunagapally), Maharashtra (Pune, Nagpur and Aurangabad) and Tamil Nadu (Ambilikkai) which are under consideration of including under the ICMR network. Although the population covered by the above registries is very limited, it gives some idea of the extent of the cancer problem in the country.

Cancer control plan was initiated in the country in 1975-76. Based on the information on burden and patterns of cancers obtained from the NCRP, the Government of India framed the National Cancer Control Programme (NCCP) in 1985 and updated in 1995. The emphasis is on primary prevention of tobacco related cancers, health education on genital hygiene and sexual & reproductive health and secondary prevention of uterine cervix, breast and oro-pharyngeal cancers and finally on the extension and strengthening of therapeutic services including pain relief. The budgetary

requirements for cancer control activities include funds for (i) therapeutic requirements, (ii) pain relief, (iii) primary and secondary prevention strategies. In order to implement and establish cancer control measures for a comprehensive cancer care, accurate information on existing facilities in the country in terms of manpower, material, financial allocation and other resource statistics are all needed. However, accurate information on all such aspects is currently not available.

Besides the above, detailed information of institutions for training facilities in terms of radiotherapy, cyto-technicians, cyto-technologists, radiation physicists etc. are not available. A few institutions have ongoing continuing medical education courses in surgical oncology, medical oncology and onco-pathology. Still there is considerable deficiency in trained manpower of all categories as well as training facilities in the country. With expansion of cancer detection and treatment facilities, the above deficiency is likely to increase unless adequate steps are initiated at the earliest.

There is insufficient information on the present availability of diagnostic facilities for cancer, particularly of radio-diagnosis, use of advanced techniques like scanning, imaging, immunological and biochemical methods. Presently, there are 22 regional cancer research, treatment and training centres. Efforts should be made by these centers and other agencies to collect detailed information regarding the presently available manpower and other resources needed for cancer control activities. Such information would help to understand the present requirement of the manpower, material and the resources needed for tackling the present load of the cancer cases and also for future planning.

Finally, I thank you for accepting me as the editor of CRAB. I also appeal to you to provide articles for publishing in the next issue of CRAB, and wishing you all a happy and prosperous new year.



Aleyamma Mathew, M.Sc., Ph.D, MNAMS

Associate Professor of Epidemiology and Clinical Research
Regional Cancer Centre
Thiruvananthapuram

**XIX ANNUAL REVIEW MEETING & WORKSHOPS
[NATIONAL CANCER REGISTRY PROGRAM - ICMR]
CANCER INSTITUTE (W.I.A), CHENNAI - 600 020
NOVEMBER 11-14, 2003**



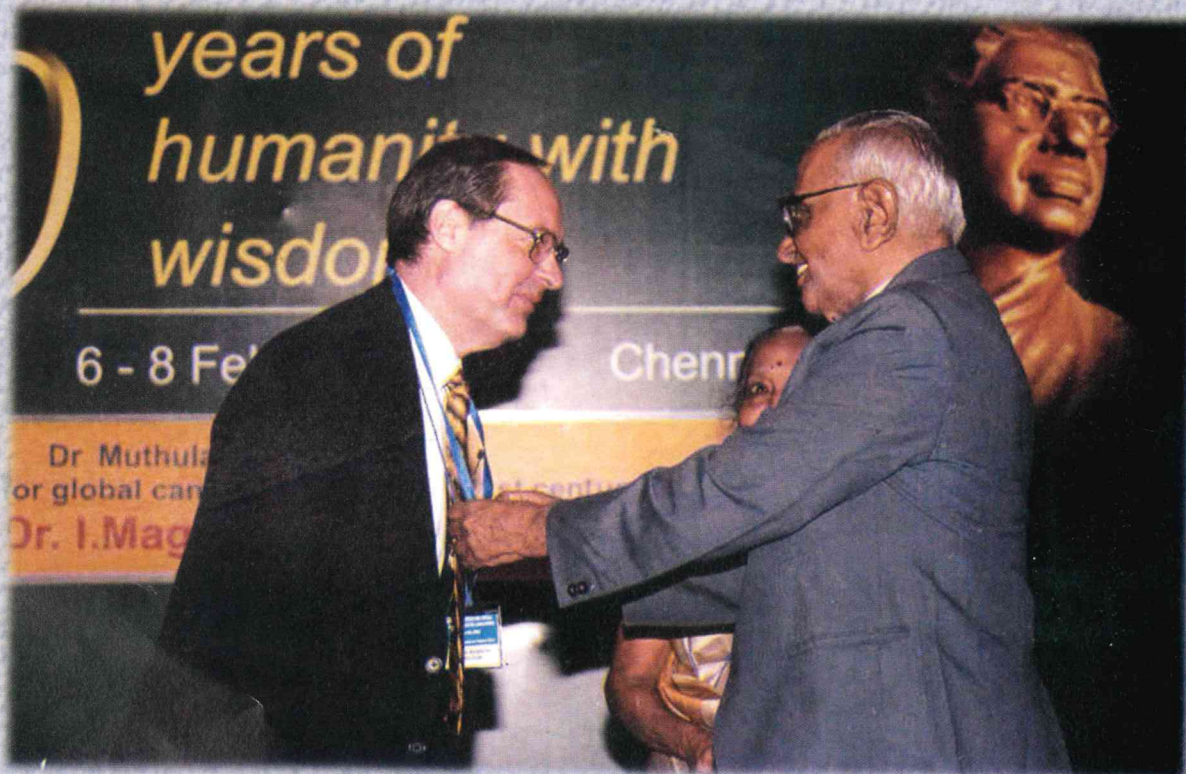
Dr. A. Nandakumar, Officer-in-charge, ICMR, NCRP, at the XIX ARM at Chennai.



*Dr. Usha K. Luthra, Special Advisor on Cancer Research ICMR,
Dr. V. Shanta, Chairman, Cancer Institute (W.I.A.) and Dr. P.S.S. Sundar Rao,
Steering Committee, ICMR at the XIX Annual Review Meeting of Cancer Registry.*



The President, Governor of Tamil Nadu, Dr. V. Shanta and their eminent panelists stand for the National Anthem at the Golden Jubilee Inauguration.



Dr. Mc Grath receives a medal of commendation from Dr. S. Krishnamurthy, Advisor, Cancer Institute (W.I.A.) at Golden Jubilee Scientific Programme.

Special event celebration – Golden Jubilee of Cancer Institute (W.I.A), Chennai, 1954-2004

(Information given by the Cancer Registry, Chennai)

The journey of Cancer Institute (WIA), Chennai, over time, is a “saga” by itself. Born on the 18th June 1954, the institute crossed a milestone by completing 50 years of useful existence this year and continuing to provide yeoman service in the study of various aspects of cancer. In the registry parlance, this institute has the unique honor of establishing a hospital cancer registry as early as 1st January 1955.

The golden jubilee celebrations of this prestigious institution commenced with an inaugural function on 6th February 2004. The memorable occasion was set to a crescendo by the participation of His Excellency, Dr.A.P.J.Abdul Kalam, President of India. His talk in extempore, covered the various facets and approaches in cancer research. There was a clear mention of registry and its role in his talk, which would make all cancer registry personnel proud. He declared open the “new hospital management computer network system” at the institute and dedicated it to the welfare of the patients and research activities. There was adulation all over the air with surging crowd of more than 2,500 from all walks of life: scientists and alumni from abroad and all over the country, donors and philanthropists who have stood by the institute at its worst times, friends, well wishers, staff, patients and relatives. There was rapt attention among the gathering when the audio-visual tracing the history of the institute with memorable events was projected. The screening ended with a reverberating song, set to tilting music, shot within the campus by famous crew of the Tamil film industry and participated by the entire medical and para-medical fraternity of the institute conveying the simple message in eloquent terms that “Cancer is not the end and there is life after that”.

The celebrations were not bereft with scientific flavor. The golden jubilee scientific program titled “Futuristic approaches to cancer care” with the motto of “Today’s research is tomorrow’s treatment”, was organized on 7-8 February 2004. The delegates numbered 150 with the invitees galore: Dr.R.Sankaranarayanan from IARC, France, detailed the screening programs on cervical cancers in India; Prof.R.D.Favera, Columbia University, USA, highlighted the “Era of chips” in the molecular pathogenesis of diffuse large cell lymphoma; Prof.S.Slavin, Israel, shared his experience in non-myeloablative bone marrow transplantation; Prof.K.Sikora, UK, summarized the molecular targets for drug therapy; Prof.J.Burn, UK, revisited molecular approaches to cancer prevention, especially hereditary cancers; Prof.V.Knobel, Germany, spoke on bio-markers of HPV induced cancers and Dr.Lalitha, USA, highlighted the genetic heterogeneity of acute myeloid leukemia.

Dr.V.Shanta, Chairman, Cancer Institute (WIA), Chennai, delivered the golden jubilee lecture on “Cancers unique to women, special features, trends and survival”. She dealt with the incidence rates of cancers of the cervix and breast in India, less developed and more developed countries and discussed their special features and trends. She presented the long-term overall and disease free survival rates of cervical and breast cancers spanning four

decades with respect to important prognostic factors like age at diagnosis, stage of disease and socio-economic status indicators. Dr.I.Magrath, Belgium, rendered the Dr.Muthulakshmi oration. He is currently the president of the International Network for Cancer Treatment and Research (INCTR) and his name is synonymous with lymphoma and leukemia management. Other speakers included Dr.T.Rajkumar on molecular aspects of cervical cancer and trends in hereditary cancers; Dr.T.G.Sagar on challenges conquered in medical oncology; Dr.B.Nagarajan on molecular diagnostics in cervical cancer; Dr.Ravikannan on future of surgical oncology; Dr.A.Vasanthan on trials carried out in oral and cervical cancers; Dr.Lalitkumar, New Delhi, on neo-adjuvant chemotherapy in ovarian cancers; Mr.S.R.Venkatasubramaniam, Hyderabad, on the opportunities that the bio-materials held for the medical community and Dr.R.Swaminathan on "Cancer pattern, trend and survival in India, less developed and more developed countries" and "The research activities by the cancer registry in the institute over these years".

Other participants in the golden jubilee scientific meeting from the cancer registry department were Dr. Nalini, Mr.J.Murugaiyan, Ms. R.Rama, Mr. R.Selvakumaran, Mr. S.Devarajan, Ms. R.Mahalakshmi, Ms. M.Kavitha, Mr. S.Sivakumar, Mr. S.Balasubramaniam, Mr. M.S.Paneer Selvam, Mr. P.Thangavel, Mr. T.S.Sambandan and Mr. A.Elumalai.

Workshops and education meetings were conducted following this scientific program, targeting specific audience, rich in content and distinguished faculty. They included (i) Hands on training workshop on newer techniques in molecular oncology, February 2004, 24 delegates, (ii) "Cancer institute surgical oncology workshop", February 2004, 125 delegates, (iii) "Update on acute lymphoblastic leukemia" in collaboration with INCTR, February 2004, 130 delegates (iv) "Referring Doctors' Meet", CME program for medical practitioners referring cases to Cancer Institute, March 2004, 75 delegates (v) Training workshop on oncology for medical graduates and interns, June 2004, 300 medical graduates and interns attended the training workshop.

The golden jubilee celebrations concluded with the adherence of June 18, 2004, as the "Thanks giving day". On this occasion, the donors and well-wishers who have remained as pillars of strength and contributed significantly to the growth of the institution, were fondly remembered and offered felicitations. The day was also observed as the "Cancer survivors' day", the fourth of its kind, conducted annually since 2001. There was an overwhelming response from the cured patients, relatives, friends and invitees. Mrs.Sheela Rani Chunkath, Secretary, Health and Family Welfare, Government of Tamil Nadu, was the Chief Guest. She declared without hesitation that any amount, given as donation to the institute, will be utilized properly and every paise accounted for. Dr.Maithreyan, Member, Rajya Sabha, graced the function and shared his experiences as an alumnus of the institute.

Role of Regional Cancer Centre, Thiruvananthapuram on Cancer Control Programmes in Kerala, India

Dr. B. Rajan, Director, Regional Cancer Centre, Thiruvananthapuram

The National Cancer Control Programme of India was formulated in 1984, and updated in 1995 focusing on the primary prevention of tobacco-related cancers, as 50% of all cancers in India is found to be due to tobacco use. Secondary prevention focuses on cancers of uterine cervix, breast, oral cavity and pharynx, augmentation of treatment facilities and establishment of equitable pain control and a palliative care network throughout the country, as more than 70% of cancer patients report in very late stages.

Based on information from the existing population-based cancer registries, it is estimated that the common forms of cancers in Kerala are oral cavity, pharynx and lung in males. Breast, cervical and oral cancers, which are preventable or can be detected with simple tests and treated, predominate in females

With limited resources, under the leadership of Regional Cancer Centre (RCC), Thiruvananthapuram, a large number of community based programmes have been conducted during the last two decades which provided wide coverage and better acceptability to cancer control activities in the state of Kerala. In 1988, Kerala was the first state in India to formulate a cancer control programme (called a 10 year action plan), with the same goals as the national plan.

The following are some of the land marks achieved by the Regional Cancer Centre, Thiruvananthapuram.

1. Establishment of early cancer detection centre (ECDC) at Ernakulam (1984)
2. Establishment of the country's first community oncology division (1985)
3. Establishment of ECDC at Palakkad (1986)
4. Early cancer detection facility in employees scheme (1990)
5. Early cancer detection facility in RCC (1991)
6. District level cancer control programme at Ernakulam (1992)
7. Networking of pain control centre (1992)
8. Establishment of ECDC at Kannur (1995)
9. Establishment of peripheral nodal centre at Kodungalloor (1995)
10. Establishment of ECDC at Kollam (1997)
11. Establishment of peripheral nodal centre at Chenganoor (2003)

HUMAN RESOURCES DEVELOPMENT FOR CANCER CONTROL

One of the major activities towards empowering the community for cancer control is to train and educate large numbers of professionals and community volunteers. RCC regularly conducts training programmes on cancer control and continuing medical education programmes for various specialists, general medical practitioners, medical students, doctors of other systems of medicine and paramedical personals. Each programme follows a specified curriculum. Pre and post training evaluations are always carried out. Table 1 gives the details of professional training programmes for cancer control conducted during 1986 to 2004.

Table 1: Professional training for cancer control (1986 - 2004)

Regional cancer centre, Thiruvananthapuram

Type of trainees	No. trained	No. of programmes
General practitioners	2135	36
Specialist doctors	101	5
Dental surgeons	220	3
House surgeons	1227	23
Medical students	495	5
Doctors of other systems of medicine	1327	7
Colposcopy training to all categories of doctors	965	35
Nurses, health workers, health inspectors etc.	11,666	96
Total	18,136	210

HEALTH EDUCATION PROGRAMMES

Health education programmes were aimed at reducing risk factors (tobacco control and dietary modulation), improving awareness about common cancers, and propagation of warning signals of cancer and self-examination procedures. Until the mid 1980's, there were no organised efforts for health education or any software available for the same. Generation of health education materials for anti tobacco campaigns was one of the major activities undertaken during the last 15 years by the community oncology division of RCC.

RCC conducted two state-wide programmes targeting teenagers, through schools. In one programme, 126,000 families were declared "tobacco free". A second programme, using a similar approach, was implemented in over 6,000 schools. Training regarding anti-tobacco messages was given to 5,000 doctors and over 9,000 other health workers. More than 130,000 volunteers were trained to support the anti-tobacco messages throughout the villages.

Executive orders have banned smoking in educational institutions, government offices, public transport and other public places. Target groups consisting of scouts and guides organisation, national service scheme, national cadet corps, members of youth clubs, women's clubs, community volunteers, policy makers and some other special groups were trained on the principles of cancer control and prevention, which is shown in Table 2.

Table 2. Health education programmes (1986-2004)

Regional cancer centre, Thiruvananthapuram

Type of trainees	No. trained	No. of programmes
National service scheme student volunteers	4110	29
Unemployed educated youth volunteers (Community volunteers)	17,928	70
Administrators, policy makers, police officers, political leaders	1109	20
Media personnel	198	4
Educational institution staff, scout masters, guide captain & parent-teachers association members	11578	58
Union leaders (factory, bank, office, hotel)	5245	42
Bank employees and office staff	1878	10
Religious leaders and church members	5929	19
Elite social organisation members (Lions, Rotary club etc.)	1589	26
Talented students, student leaders and tribal students	32,409	45
Lay public	35,343	61
Non-governmental organizations	14,643	42
Total	1,31,959	426

Village level comprehensive cancer control programme

RCC initiated "Village level comprehensive community cancer control programme" (VCCCP) in 1989. A local resource group was identified to sponsor the comprehensive community cancer control programme in the village. Socially committed men and women from the community were identified and given one day training on the causes of cancer, warning signals of cancer, importance of early detection and usefulness of prompt treatment. They were also given health messages to improve life styles and to reduce the risk of cancers. These volunteers were requested to conduct door to door campaign and survey for identifying high risk persons in the community. They motivated such persons to subject for a physical examination and undergo diagnostic procedures like Pap smear, FNAC or oral biopsy in a pre-fixed date in the village.

Any person found to have cancer was given appropriate referrals and economic support if necessary by the sponsor. Patients undergoing treatment were monitored by volunteers and they were sent for follow up regularly. As part of this programme, health education programmes were conducted twice a year, on 31st May (on the occasion of 'The World No-Tobacco-Day') and on another occasion. The results of comprehensive community cancer control programmes conducted are shown in Table 3.

Table 3: Trained unemployed educated youths in cancer screening (1989-1999)

Results at glance	Number
Number of volunteers	16,520
Total population covered	709,970
No of villages selected	71
Total suspected persons with warning signals of cancer	40,352
No. of patients responding and reporting to camp	34,781
Compliance rate (Response rate)	86.19%
New cancers	324
Old cancers with recurrence	132
Total oral precancers	2323
Other precancers	1297

Cancer control among tribal settlements of Kerala state

As part of the drive to control the menace of cancers occurring in the tribal areas of the state, the RCC took initiative to launch a programme titled "Prevention and control of commonly occurring cancers among the tribal population of Kerala state" with the help of tribal development department, Government of Kerala. The objectives of this three-year project were to provide awareness on primary prevention of cancers followed by early cancer detection screening in the tribal settlements of Idukki, Palakkad and Wyanad districts of Kerala.

Tobacco awareness through the popular form of art "Magic"

An innovative programme to create anti tobacco awareness among the teenagers of tribal high schools in Kerala was conducted by RCC in collaboration with World Health Organisation. The program titled "Tobacco awareness through magic for teenagers in the tribal and other backward areas of Kerala State, India" was conducted in 30 high schools of Idukki, Palakkad and Wyanad districts of the state. The highlight of this program was that approximately 30,000 students

paid attention to this programme and messages concerning tobacco hazards were presented through the popular form of art "magic" and students got the opportunity to monitor the scientific content of the statements given in the magic shows.

SECONDARY PREVENTION PROGRAMMES

RCC, Thiruvananthapuram was the first cancer centre in Indian Union to formulate a cancer control programme as early as in 1978 (ten year action plan). Even from 1978, RCC, has successfully conducted major population based cervical cytology screening programmes and has ascertained the population-based prevalence of cytological abnormalities. The first step was initiation of a mass screening of eligible women in Anchalumood, Thiruvananthapuram district (Community development block screening program) in 1978.

During 1978-93, RCC undertook a pilot project for screening 25,000 women for cervical precancer and cancer in Kollam district in which more than 20,000 women had undergone Pap smear testing through primary health centre, Thrikkadavoor. This program proved the following.

- a) Feasibility of undertaking population based cancer control programmes.
- b) Compliance of women for cancer detection examination.
- c) Impact of propaganda to motivate people to voluntarily subject themselves for examination.
- d) Training for health workers in the government sector for cancer control programmes.

Since 1981, referred patients from medical colleges, district hospitals and other hospitals undergo Pap smear examination at the RCC as part of cervical cancer control programme.

Of late, decentralization of administration has taken place and as a result "Health" has become a subject under the control of the local bodies (Gramapanchayath) in India. This has empowered the public especially women to care and maintain their health. Even panchayaths have envisaged cancer control activities as part of their people's plan programmes. These were profitably utilized for vigorous implementation of cervical cancer control in the state of Kerala by RCC.

Early Cancer Detection Centres (ECDC)

RCC, Thiruvananthapuram established early cancer detection centres (ECDC) at Ernakulam in 1984, the first of its kind in developing countries and at Palakkad in 1986. Since its inception in 1984, ECDC, Ernakulam has screened more than 80,000 people. ECDC's have been introduced in Kannur, Pathanamthitta, Kodungalloor and Chengannoor in Kerala.

Success of cancer control programmes in Kerala has been greatly attributed to the facilities organized for early detection. The ECDCs are the focal points for co-ordination and verification of early detection of cancer

programmes in the state. Early cancer detection centres were originally government initiated programmes. The centres are now run by the RCC or non-governmental organizations with technical support of RCC. The activities are based mainly on clinical examination, cytology and histopathology. The centres provide an easily accessible diagnostic facility for people in the respective district and also function as co-ordinating agency for cancer related activities such as prevention, cancer education, palliative care and follow up care. Patients referred from these centres are found to be relatively in early stages of disease than those referred from other hospitals to RCC.

District Cancer Control Programme (DCCP)

During 1991, the Government of India started the district level cancer control programmes as demonstration projects for implementation of the NCCP goals. Ernakulam district in Kerala was one of the districts identified as the location for this demonstration project.

The district of Ernakulam has a population of 28,17,236 covering an area of 2,408 sq.km. (1991 census). About 25% of the population is in the 35-64 age group. Tumour pathology services are available in 6 non-governmental hospitals and at ECDC, Ernakulam. Community health services are rendered through 75 primary health centres and 331 sub centres. For implementing the district cancer control plan, a novel methodology was evolved. The district of Ernakulam was divided into 4 areas, each with a nodal centre located in one of the taluk headquarters hospital. The activities were programmed for these nodal centres and the taluk headquarters hospital. The population to be covered by each nodal centre was calculated to be around 5,50,000, of which the target group for screening was calculated to be around 1,37,000. This population was screened by conducting 50 screening camps every year in each of the nodal centres. One field screening programme every week by each nodal centre and a screening clinic in the nodal centre on 3 days in a week was conducted during the past 7 years. Health workers of the governmental health services and community volunteers spread cancer awareness messages and motivated people to attend detection clinics. A team of trained doctors, surgeons and gynaecologists, a technician and supporting staff, visited these clinics along with the staff of primary health centre. The ECDC at Ernakulam provided the central cytopathologic facility and is co-ordinating the technical activities. All cytology smears are brought to the RCC and reports were sent to the patients directly. Approximately 26,000 Pap smears were done which detected 177 cervical cancers and 2,398 pre-cancers during the past 7 years. Under this programme a pain and palliative care clinic is being organised in the headquarters hospital.

International school of colposcopy

International Agency for Research on Cancer (IARC), France and Bill Gates Foundation have helped to organize a training centre to orient/re-orient health workers, nurses, technicians and doctors in visual inspection using 4-5% acetic acid (VIA), visual inspection using lugol's iodine (VILI), visual inspection using acetic acid with magnification (VIAM), colposcopy, cytology and treatment of preinvasive lesions. An international school of colposcopy is organized in the community oncology division of RCC. This facility is providing short term training for potential candidates recommended by WHO/IARC and the international member organizations of the alliance for cervical cancer prevention. A video colposcope is used for demonstration. Two hundred and fifty one gynecologists were trained from India and abroad in colposcopy, biopsy, and treatment of preinvasive lesions by LEEP and cryotherapy and visual low cost techniques during the past 7 years.

Pain relief and palliative care

A pain control and palliative care division was started by the RCC in 1986. In 1988, RCC was the first institution in India to manufacture and supply morphine liquid. Morphine tablets were first made available in 1991 and are now locally manufactured by RCC. A cancer pain relief network has been established, consisting of two nodes and 16 peripheral centres. A unit to make home visits to terminally ill patients and to train the relatives of these patients in principles of cancer pain control was initiated in 2000, and is being expanded.

Looking ahead

The Government of India is formulating newer approaches under the 10th five year plan towards implementation of National Cancer Control Programmes. The noteworthy feature would appear to be the inclusion of non-governmental agencies in the action plan. RCC has largely benefited from such support at Pathanamthitta and Kannur. In the years to come this will be a model for continuing cancer control programmes in the country.

Role of socioeconomic status and reproductive factors in breast cancer: A case-control study: Summary of the doctoral thesis

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Breast cancer is predominantly a disease of women and has a major impact on the health of women. It is the most common cancer among women in all the developed countries (except for Japan), as well as in Northern Africa, South America, East, Southeast and Western Asia and Micronesia/Polynesia. In India, the incidence rates of breast cancer are gradually increasing in all the urban areas even though the rates of breast cancer are low in rural areas. Breast cancer is the leading site of cancer among women in Mumbai, Delhi, Bangalore and Bhopal and it ranks second in Chennai and Barshi. The age-adjusted rates of breast cancer in these centres were 30.8, 30.8, 25.2, 24.5, 26.7 and 8.1 per 100,000 women respectively during the period 1997-98 (NCRP, Two year report of the PBCRs 1997-98).

In order to study the role of socioeconomic status and reproductive factors on the risk of breast cancer, a hospital-based case-control study was undertaken. Consecutive new breast cancer cases were ascertained through the cancer registry at Kidwai Memorial Institute of Oncology, Bangalore. Three hundred and sixty cases of breast cancer confirmed microscopically and an equal number of controls without history of any disease in breast, gynaecological organs or endocrine glands matched for age (+5 years in the WHO age group) formed the study. The controls were recruited from among female attendants of patients staying at the "Dharmashala" attached to the hospital, which is an ambulatory patient home. Standard epidemiological analyses of a matched case-control design were carried out.

The major findings of the study were that breast cancer risk was associated with increased levels of schooling, increased income and urban residence. Compared with ever married women, never married women were at increased risk [adjusted odds ratio (OR) = 8.74] of developing breast cancer. Nulliparous women had a two-fold risk of developing breast cancer compared to parous women. Compared with parous women of more than six children, the risk among nulliparous women was found to be about three-fold. Women who delayed their first childbirth were at elevated risk of developing breast cancer. Compared with women whose age at first childbirth was below 20 years, women whose age at first childbirth was above 30 years were at more than two-fold risk. The risk of developing breast cancer was found to be higher in women who never lactated (adjusted OR=1.75) compared with those women who had ever lactated. Breast feeding for a longer duration was found to be an apparent protective factor for the risk of breast cancer independent of age at first childbirth, parity and other potential confounding factors.

Cancer incidence rates in India – Pooled analysis

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This brief communication presents a pooled analysis of all Indian cancer registry data published for the period 1993-1997 in cancer incidence in five continents (CIV) volume VIII (Parkin DM, Whelan S.L, Ferlay J, Teppo L and Thomas D.B. eds. Cancer incidence in five continents volume VIII, IARC Scientific Publication, Lyon, France, 155: 2002). The Indian cancer registries contributed data for CIV, volume VIII are Ahmedabad (urban), Bangalore (urban), Chennai (urban), Delhi (urban), Mumbai (urban), Nagpur (urban), Pune (urban), Karunagappally (rural) and Thiruvananthapuram (urban and rural).

Estimation of pooled incidence rates

Step 1. The number of cancers by site, sex and five year age group from the above cancer registries for the period of five years (1993-97) was divided by 5 except for Delhi which was divided by 4 as Delhi data was for the period 1993-1996. This is to obtain the number of cancer cases for a single year.

Step 2. The respective numbers thus obtained in step 1 were summed up to obtain the total number of cancer cases in each five year age group (A_i) by site and sex (i represent each five-year age group).

Step 3. The population by sex in the respective five-year age groups of all the above registries were summed up to obtain the total population (B_i) (i represents each five-year age group).

Age specific rate (ASpR)

This rate is obtained by division of A_i by the corresponding estimated population B_i in each five year age group and multiplying by 100,000 for each site and sex.

Crude incidence rate (CR)

This rate is obtained by division of the total number of cancer cases (ΣA_i) by the corresponding total population (ΣB_i) and multiplying by 100,000 for each site and sex.

Age adjusted or Age standardised Rate (AAR)

$$\text{AAR} = \frac{\sum (\text{ASpR}) \times (\text{No. of persons in world standard population in that five year age group})}{100,000}$$

Results

A total of 38.3 million population is covered by all the registries. Mumbai and Delhi registries together covered 54% of the total population. (Table 1) The annual pooled crude (CR), age-adjusted (AAR) incidence rates for all sites together are given in Table 2. The ten leading cancer sites altogether contributed to 57% of all cancers among males and 69% of all cancers among females. Cancer of the oral cavity (AAR: 11.8 per 100,000 males) was the leading site among males followed by lung (11.3 per 100,000 males). Among females, cancer of the breast (AAR: 25.1 per 100,000 females) was the leading site followed by cancer of the uterine cervix (AAR: 21.2 per 100,000 females). The third and fourth common cancers were esophagus (AAR: 7.7 per 100,000 males) and larynx (AAR: 6.8 per 100,000 males) in males and ovary (AAR: 6.7 per 100,000 females) and oral cavity (AAR: 6.4 per 100,000 females) in females.

Table 1. Estimated population covered by the registries

Registries	Male	Female	Total	% of population
Thiruvananthapuram	545757	565054	1110811	2.9
Poona	1380101	1264620	2644721	6.9
Nagpur	545127	498312	1043439	2.7
Mumbai	5912257	4820896	10733153	28.0
Karunagapally	200557	205627	406184	1.1
Delhi	5338227	4473696	9811923	25.6
Chennai	2060436	1939090	3999526	10.5
Bangalore	2515342	2277684	4793026	12.5
Ahamadabad	1983973	1763752	3747725	9.8
Total	20481777	17808731	38290508	100

Table 2. Pooled cancer incidence rates per 100,000 population in India

Incidence rate	Male	Female
Crude incidence rate	71.0	80.2
Age-adjusted incidence rate	109.8	115.2

Table 3a. Age-specific incidence rates per 100,000 population of various registries and the pooled incidence rates in India:

Males

Age	Males									
	All India	TVM	Poona	Nagpor	Mumbai	Karuna-gapally	Delhi	Chennai	Bangalore	A.bad
0-4	12.3	14.0	8.4	18.4	10.7	13.3	15.1	15.4	9.7	8.9
5-9	10.9	6.5	7.0	16.1	9.1	11.7	15.2	15.0	7.7	7.0
10-14	10.9	6.9	8.3	19.0	9.4	6.1	15.8	9.7	6.4	9.3
15-19	11.1	8.3	9.9	16.7	11.0	10.5	13.1	10.0	8.4	10.3
20-24	13.2	9.1	14.3	19.7	11.5	13.5	17.8	10.1	8.9	13.5
25-29	16.1	10.8	15.9	21.2	14.1	13.8	19.8	16.2	12.7	16.5
30-34	25.7	21.8	24.7	30.9	22.3	19.7	31.6	25.2	19.8	28.8
35-39	41.0	28.6	31.9	55.6	37.3	38.1	50.9	42.7	30.6	46.0
40-44	72.9	59.3	60.6	97.8	66.3	60.7	88.5	73.2	53.2	88.4
45-49	127.4	111.5	93.3	179.7	110.7	154.9	145.5	160.6	101.5	150.1
50-54	216.0	211.6	194.7	263.7	190.8	199.9	267.0	222.7	177.3	216.8
55-59	322.8	320.2	336.3	354.1	285.5	331.4	363.9	337.6	292.2	345.7
60-64	434.4	330.9	362.0	544.8	447.6	425.7	482.6	445.9	359.2	426.8
65-69	603.7	406.4	345.8	538.0	684.7	513.1	671.7	546.3	511.9	588.2
70-74	691.5	490.3	713.8	419.6	885.9	801.4	739.2	607.3	507.3	641.3
75+	695.5	524.4	880.2	590.0	939.3	354.5	648.3	582.9	516.2	721.6

Table 3b. Age-specific incidence rates per 100,000 population of various registries and the pooled incidence rates in India:

Females

Age	Females									
	All India	TVM	Poona	Nagpor	Mumbai	Karuna-gapally	Delhi	Chennai	Bangalore	A.bad
0-4	8.2	5.1	3.9	12.9	8.1	6.7	9.4	13.1	6.0	5.8
5-9	6.1	2.9	5.1	6.5	5.8	1.2	8.3	7.0	4.9	3.6
10-14	6.9	10.8	7.9	11.1	6.2	9.8	8.0	7.2	5.4	5.0
15-19	8.9	8.1	8.4	21.2	8.6	7.1	10.9	8.4	5.8	7.0
20-24	13.2	13.2	8.7	21.4	11.3	14.9	18.0	13.1	10.9	10.3
25-29	22.8	20.7	21.3	30.6	19.9	28.5	29.8	23.2	20.1	14.6
30-34	43.5	37.1	41.0	51.2	36.5	30.3	58.8	42.7	39.4	34.0
35-39	81.9	61.7	63.9	95.7	74.7	68.3	102.6	97.2	68.9	71.7
40-44	151.6	123.7	130.4	209.9	138.5	102.3	200.1	155.7	129.0	116.0
45-49	223.3	160.0	232.6	299.8	204.4	142.8	253.8	256.0	220.7	175.7
50-54	305.6	213.1	327.5	279.8	287.1	127.3	386.1	315.6	301.2	215.4
55-59	341.4	216.6	311.5	230.1	340.2	196.6	407.7	369.7	379.7	246.2
60-64	419.8	249.1	376.0	420.4	441.8	277.1	514.7	442.0	407.2	275.4
65-69	498.2	321.1	545.2	481.7	593.7	408.7	519.6	457.7	492.9	362.7
70-74	522.4	396.1	551.8	374.5	666.8	352.5	526.9	482.3	494.5	368.5
75+	409.6	293.3	599.9	318.2	637.0	220.8	387.6	333.6	346.1	280.8

Figure 1a: Age-specific incidence rates per 100, 000 population of various registries and the pooled incidence rates in India

Males

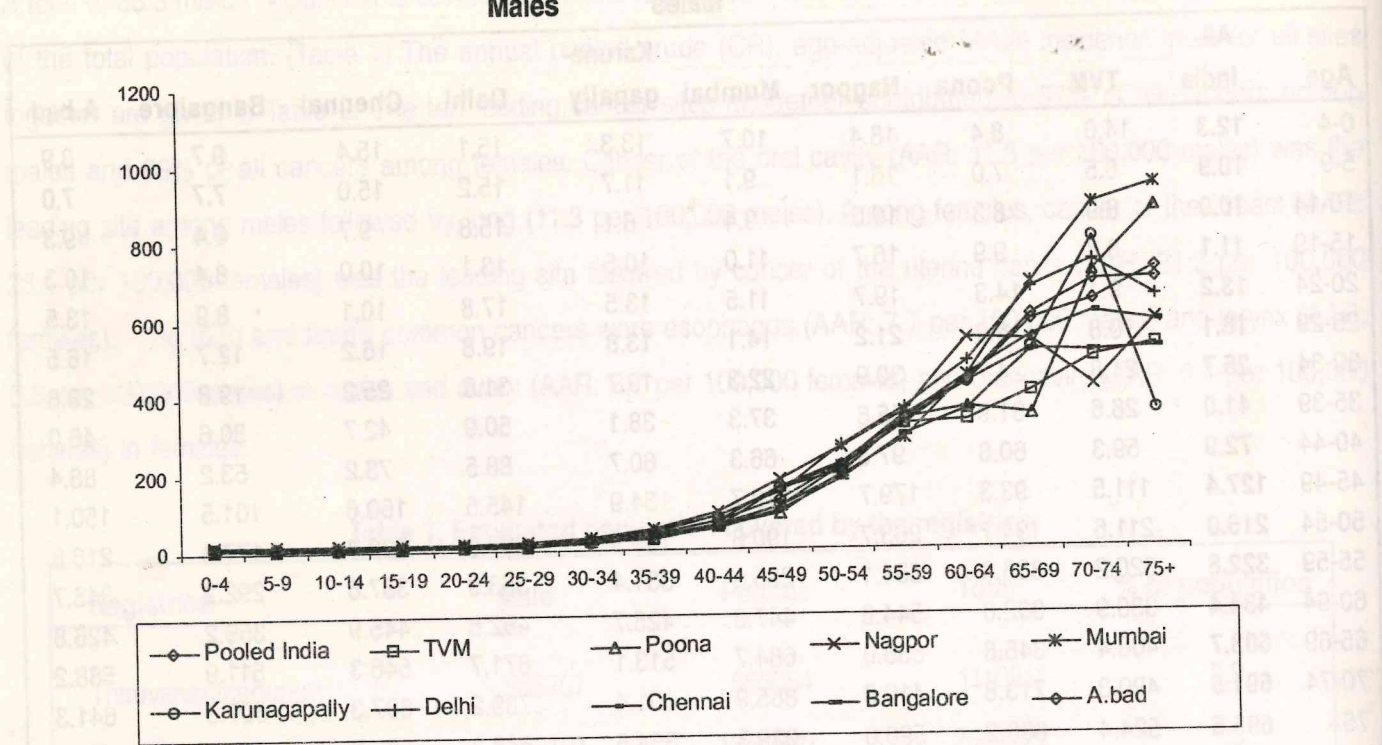


Figure 1b: Age-specific incidence rates per 100, 000 population of various registries and the pooled incidence rates in India

Females

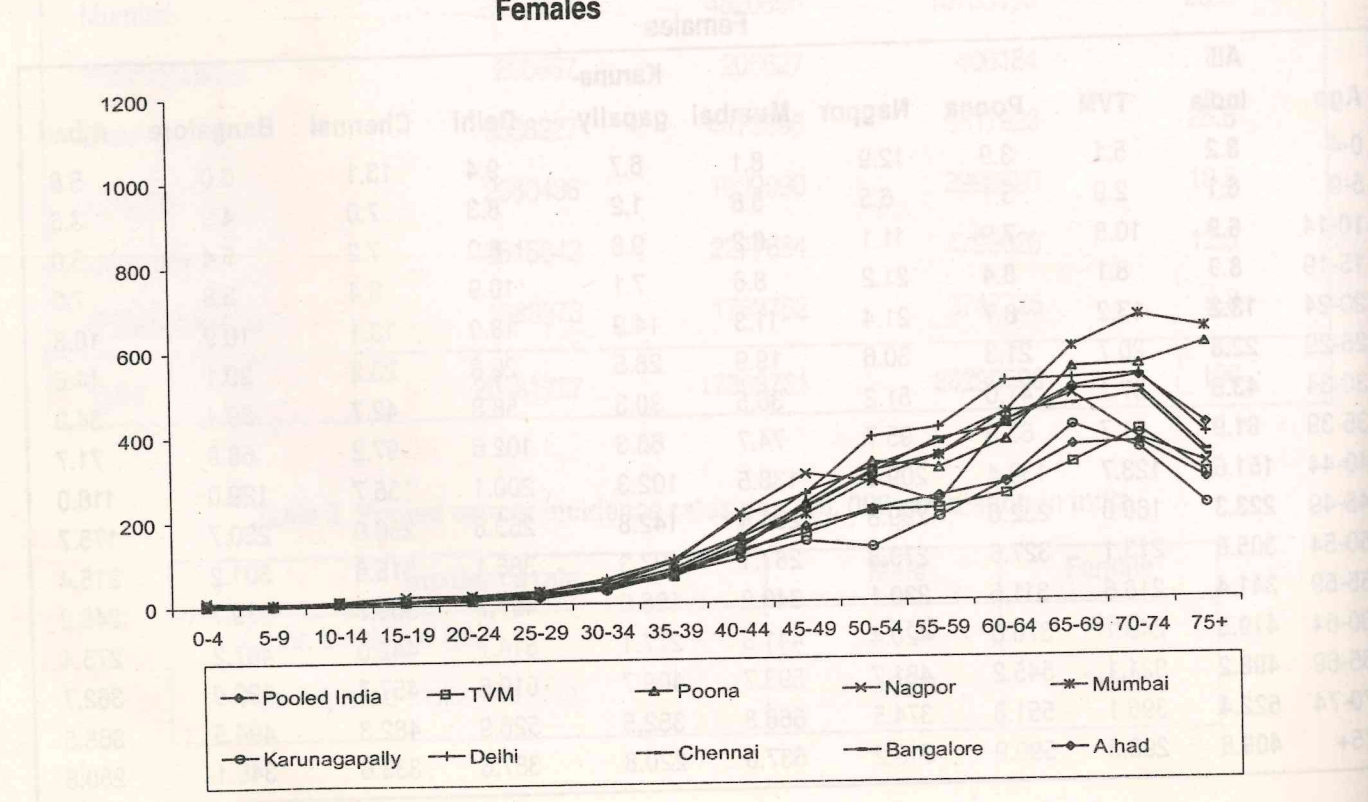


Table 4a: Pooled age adjusted incidence rates (AAR) per 100,000 population and proportion (%) of ten leading sites of cancers in India (Males)

ICD-10	Site	AAR	%	Rank
C00-06	Oral cavity	11.8	10.5	1
C12-13	Hypopharynx	11.3	3.4	7
C15	Oesophagus	7.7	6.4	3
C16	Stomach	6.8	5.5	5
C32	Larynx	6.5	5.6	4
C33-C34	Lung	4.9	9.1	2
C61	Prostate	5.0	4.0	6
C67	Bladder	3.6	3.1	8
C81	Hodgkin's disease	3.9	4.0	9
C91-95	Leukaemia	3.9	4.9	10

Table 4b: Pooled age adjusted incidence rates (AAR) per 100, 000 population and proportion (%) of ten leading sites of cancers in India (Females)

ICD-10	Site	AAR	%	Rank
C00-06	Oral cavity	6.4	5.1	4
C15	Oesophagus	5.5	4.3	5
C16	Stomach	3.4	2.8	6
C23-24	Gall bladder	3.2	2.6	7
C33-C34	Lung	2.7	2.1	9
C50	Breast	25.1	22.3	1
C53	Cervix uteri	21.2	18.6	2
C54	Corpus uteri	2.5	2.0	10
C56	Ovary	6.7	6.0	3
C91-95	Leukaemia	2.9	3.1	8

Fig 2: Pooled age adjusted incidence rates (AAR) per 100, 000 population of ten leading sites of cancers in India

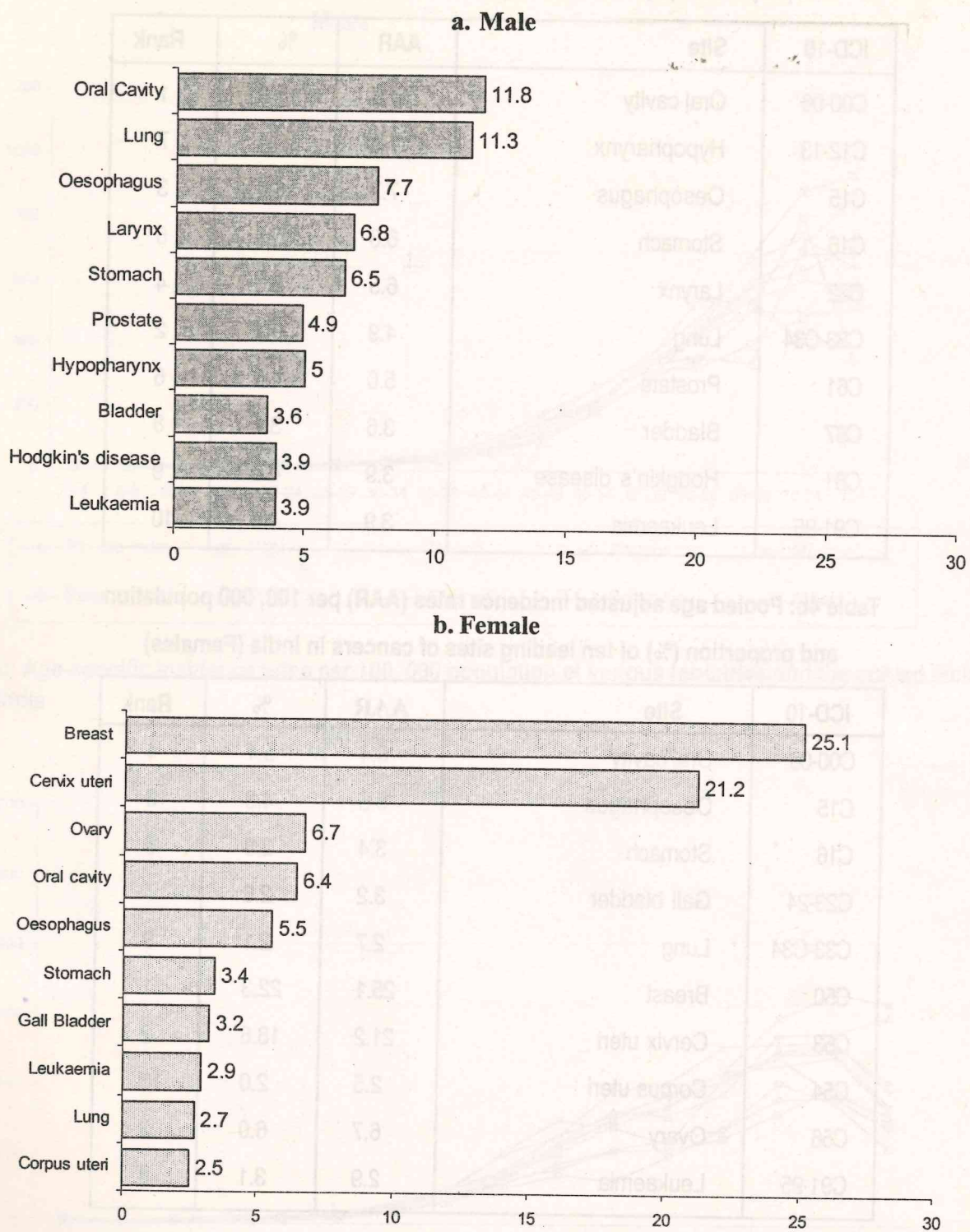


Table 5a. Pooled age-specific, crude (CR) and age - adjusted (AAR) incidence rates of cancers by site in India per 100,000 males

Site	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	CR	AAR	ICD_10
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.6	0.9	1.1	1.5	1.6	1.8	1.4	0.2	0.3	C00
Tongue	0.0	0.0	0.0	0.0	0.1	0.3	1.1	2.3	4.9	8.8	14.5	19.4	24.5	31.1	31.5	34.6	3.6	5.8	C01-02
Mouth	0.0	0.0	0.0	0.0	0.2	0.5	1.5	2.7	5.6	9.6	14.9	19.3	22.9	28.4	28.1	30.7	3.7	5.7	C03-06
Salivary gland	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.6	1.0	1.1	1.1	1.8	2.2	2.7	2.8	0.4	0.5	C07-08
Tonsil	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.5	1.6	2.4	4.9	6.3	7.4	8.9	9.4	9.5	1.1	1.7	C09
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.5	2.3	3.3	4.2	4.4	4.5	5.6	0.5	0.9	C10
Nasopharynx	0.0	0.0	0.2	0.3	0.2	0.2	0.1	0.3	0.4	0.7	0.7	1.7	1.6	2.4	2.1	2.3	0.4	0.5	C11
Hypopharynx	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.9	2.4	5.7	10.0	15.8	24.5	30.1	31.4	37.6	2.9	5.0	C12-13
Pharynx unspecified	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.8	1.7	2.5	3.7	5.4	5.9	6.4	0.5	0.8	C14
Oesophagus	0.0	0.0	0.0	0.0	0.1	0.2	0.7	1.7	4.0	8.4	16.2	24.1	35.0	47.1	52.9	58.6	4.5	7.7	C15
Stomach	0.1	0.0	0.0	0.1	0.1	0.5	1.1	2.0	4.1	7.4	12.9	20.5	26.2	38.3	44.1	51.7	3.9	6.5	C16
Small intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.5	0.6	0.8	1.1	1.1	1.3	0.1	0.2	C17
Colon	0.0	0.0	0.0	0.0	0.3	0.3	0.8	1.2	2.2	3.6	6.0	7.3	9.5	13.0	15.5	17.1	1.7	2.5	C18
Rectum	0.0	0.0	0.1	0.1	0.4	0.5	0.7	1.0	1.6	2.5	3.9	6.0	7.9	13.0	14.5	16.3	1.4	2.2	C19-20
Anus	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.7	1.4	1.9	2.2	2.7	2.3	2.2	0.4	0.5	C21
Liver	0.4	0.1	0.1	0.1	0.1	0.2	0.4	1.1	1.7	3.2	5.1	9.3	13.4	19.0	18.5	21.5	1.8	3.0	C22
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	1.1	1.9	3.4	5.4	7.2	10.2	11.5	7.7	1.0	1.6	C23-24
Pancreas	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	1.4	2.5	3.9	6.1	8.5	11.7	14.6	13.9	1.2	2.0	C25
Nose, sinus	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.8	1.0	1.7	2.0	2.1	3.4	2.9	3.8	0.4	0.7	C30-31
Larynx	0.0	0.0	0.0	0.0	0.1	0.2	0.6	1.4	3.4	7.6	14.6	23.3	31.9	44.2	44.1	42.0	4.0	6.8	C32
Lung	0.0	0.0	0.0	0.1	0.2	0.4	1.1	2.1	5.3	10.6	22.5	38.2	51.7	72.5	81.6	81.7	6.5	11.4	C33-34
Respiratory unspecif	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	C37-38
Bone	0.2	0.4	1.1	2.1	1.4	0.7	0.5	0.5	0.7	0.8	1.1	1.5	1.9	2.4	2.1	2.4	1.0	1.0	C40-41
Melanoma of skin	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.5	0.8	0.7	1.5	1.3	1.4	1.6	0.2	0.3	C43
Otherskin	0.1	0.0	0.1	0.1	0.1	0.2	0.5	0.7	0.9	2.1	2.7	3.6	5.0	7.6	8.1	8.4	0.9	1.3	C44
Mesothelioma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.3	0.9	0.9	0.0	0.1	C45

Table 5b. Pooled age-specific, crude (CR) and age-adjusted (AAR) incidence rates of cancers by site in India per 100,000 females

Site	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75+	CR	AAR	ICD_10
Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.7	0.4	1.3	1.4	1.2	0.9	0.1	0.2	C00
Tongue	0.0	0.0	0.0	0.0	0.1	0.1	0.6	1.0	2.0	2.7	4.6	5.8	8.4	10.3	8.8	8.6	1.2	1.9	C01-02
Mouth	0.0	0.0	0.0	0.1	0.2	0.2	0.8	1.8	4.0	7.3	12.0	13.0	20.3	23.1	23.9	18.4	2.8	4.3	C03-06
Salivary gland	0.0	0.0	0.1	0.2	0.1	0.2	0.2	0.2	0.6	0.8	0.8	0.8	1.1	1.2	1.4	1.0	0.3	0.4	C07-08
Tonsil	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.7	0.7	1.9	1.7	2.8	1.6	0.2	0.3	C09
Oropharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.5	0.7	1.0	1.2	0.7	0.1	0.1	C10
Nasopharynx	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.4	0.2	0.8	0.5	0.6	0.5	1.0	0.9	0.2	0.2	C11
Hypopharynx	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.8	1.7	3.3	3.1	3.4	4.6	5.4	5.6	5.2	0.8	1.2	C12-13
Pharynx unspecified	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.5	0.8	0.5	1.3	1.5	1.5	0.1	0.2	C14
Oesophagus	0.0	0.0	0.0	0.0	0.2	0.4	0.7	1.8	4.4	7.2	15.1	19.0	21.0	31.7	34.8	31.3	3.4	5.5	C15
Stomach	0.0	0.0	0.0	0.1	0.3	0.5	0.8	2.1	3.4	5.2	8.4	9.0	14.6	19.2	19.0	16.7	2.2	3.4	C16
Small intestine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.4	0.4	0.6	0.5	0.7	0.1	0.1	C17
Colon	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.8	2.1	3.4	4.8	6.0	8.6	12.2	13.8	12.2	1.4	2.2	C18
Rectum	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.9	2.0	2.6	3.7	3.8	7.2	6.8	10.4	7.5	1.1	1.6	C19-20
Anus	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.6	1.2	1.2	1.7	1.7	1.5	2.1	0.3	0.4	C21
Liver	0.2	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.9	1.7	2.4	3.2	5.6	8.7	6.9	7.1	0.8	1.3	C22
Gallbladder	0.0	0.0	0.0	0.0	0.0	0.3	0.6	1.5	3.0	5.3	8.8	10.9	14.4	15.5	16.3	15.3	2.1	3.2	C23-24
Pancreas	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	1.1	1.7	2.6	4.5	5.4	9.0	8.5	6.4	0.8	1.3	C25
Nose, sinus	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.5	0.7	1.2	1.3	2.0	1.8	3.5	1.1	0.3	0.4	C30-31
Larynx	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.8	1.9	2.6	2.5	3.0	4.7	5.9	3.8	0.6	0.9	C32
Lung	0.0	0.0	0.0	0.1	0.1	0.2	0.6	1.0	2.2	3.4	6.4	8.8	11.0	15.9	18.0	14.1	1.7	2.7	C33-34
Respiratory unspecif	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C37-38
Bone	0.1	0.3	0.9	0.9	0.7	0.5	0.5	0.5	0.7	0.6	1.1	1.0	1.1	1.5	3.2	1.9	0.7	0.7	C40-41
Melanoma of skin	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.3	0.5	0.6	1.3	1.2	1.1	1.4	0.2	0.3	C43
Other skin	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.6	0.8	1.4	2.6	3.1	4.6	5.8	8.4	8.0	0.8	1.2	C44
Mesothelioma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	C45
Kaposi sarcoma	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	C46
Connec. & soft tissue	0.3	0.3	0.2	0.5	0.6	0.6	0.7	0.8	1.1	1.4	1.7	2.1	2.9	2.9	3.3	2.6	0.8	1.0	C47-49

Table 5b Contd....

Breast	0.0	0.0	0.1	0.2	1.1	4.3	11.3	24.7	45.0	61.0	76.8	76.0	84.1	90.5	89.5	70.0	17.9	25.1	C50
Vulva	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.6	1.0	1.0	1.7	2.7	3.8	3.4	0.3	0.5	C51
Vagina	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	1.0	1.3	2.1	2.5	2.9	3.4	3.1	3.0	0.5	0.7	C52
Cervix uteri	0.0	0.0	0.0	0.0	0.7	2.7	8.6	19.6	36.5	54.6	64.4	68.7	80.4	78.0	73.0	41.6	15.0	21.2	C53
Corpus uteri	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.8	2.5	4.6	7.5	9.2	10.9	14.0	13.4	7.8	1.6	2.5	C54
Uterus unspecified	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.6	1.3	2.2	2.3	2.8	3.7	4.8	3.5	0.5	0.7	C55
Ovary	0.2	0.3	0.5	1.1	1.4	1.9	2.7	5.1	9.8	14.2	20.2	21.1	22.6	25.3	22.7	16.4	4.8	6.7	C56
Other genital organs	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.5	0.4	0.2	0.3	0.1	0.1	C57
Placenta	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.2	0.1	C58
Kidney	0.9	0.2	0.0	0.0	0.1	0.1	0.2	0.3	0.7	1.6	1.5	2.1	2.6	3.7	4.2	2.6	0.6	0.8	C64
Renal pelvis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	C65
Ureter	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.1	0.1	0.0	0.0	C66
Bladder	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.7	1.5	1.8	2.4	4.3	5.6	9.9	8.8	0.7	1.1	C67
Other urinary organs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.2	0.2	0.1	0.3	0.0	0.0	C68
Eye	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.2	0.4	0.1	0.5	0.2	0.2	C69
Brain, cen. nerv. sys.	0.8	1.2	1.4	1.2	0.9	1.2	1.6	2.1	2.6	3.6	3.6	5.2	5.3	6.8	6.2	4.6	1.9	2.2	C70-72
Thyroid	0.0	0.0	0.2	0.4	1.2	1.6	2.5	2.3	3.0	3.3	4.0	4.8	5.7	6.6	7.2	4.4	1.7	2.0	C73
Adrenal gland	0.6	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.0	0.1	0.2	C74
Other endocrine gland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	C75
Hodgkin disease	0.3	0.3	0.4	0.5	0.5	0.7	1.0	1.7	2.4	3.0	5.2	7.0	8.9	11.2	14.3	9.8	1.7	2.4	C81
NHL	0.1	0.4	0.3	0.3	0.4	0.5	0.3	0.4	0.5	0.8	1.0	0.7	1.2	1.5	1.7	1.3	0.5	0.5	C82-85,96
Immunoprolif disease	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C88
Multiple myeloma	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.7	1.0	2.1	3.1	3.8	5.8	6.5	3.7	0.5	0.9	C90
Lymphoid leukaemia	2.0	1.4	0.9	0.7	0.4	0.4	0.3	0.4	0.4	0.6	0.5	1.0	1.1	2.5	3.3	2.5	0.9	1.0	C91
Myeloid leukaemia	0.4	0.3	0.6	0.8	1.0	1.3	1.6	1.6	2.0	2.3	3.4	3.4	3.8	4.3	3.8	3.4	1.4	1.6	C92-94
Leukaemia, unspecif	0.3	0.1	0.2	0.3	0.1	0.2	0.2	0.2	0.4	0.4	0.4	0.4	0.6	1.3	1.5	1.2	0.3	0.3	C95
Other and unspecified	0.6	0.3	0.4	0.5	0.9	1.4	2.5	4.1	7.3	12.5	18.4	24.0	27.6	40.2	43.8	44.3	5.3	7.9	O&U
All sites	8.2	6.1	6.9	8.9	13.2	22.8	43.5	81.9	151.6	223.3	305.6	341.4	419.8	498.2	522.4	409.6	80.2	115.2	ALL

Observation on trends in highest cancer incidence rates recorded for each site in volumes VII & VIII of cancer incidence in five continents

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Cancer incidence in five continents (CI 5), volume VIII was published in 2002 by the International Agency for Research on Cancer, Lyon, France. This volume includes data from 186 registries in 57 countries, covering the years 1993-97. CI 5 volume VII published by the same agency in 1997 contains data from 150 registries in 50 countries covering for the years 1988-92. Both the volumes provide age standardized incidence rates per 100,000 using world standardized population for each site in both sexes. Highest age standardized incidence rates reported for individual sites by country/ population in each volume are presented in Tables 1 and 2 for males and females respectively. For determining trends in age standardized rates, the corresponding values for age standardized rates for these sites reported in volume VI covering the period 1983-87 are also incorporated in Tables 1 and 2.

Highest incidence for salivary gland is recorded by the population of Canada North West Territories. In females the incidence rate is recorded somewhat same in both the volumes, while in males significant increase is noted in incidence from volumes VII to VIII. Highest incidence for nasopharynx is recorded by HongKong population. Significant decrease in incidence is recorded in both sexes from the period 1983-87 to 1993- 97. Highest incidence for kidney is recorded by Czech Republic population. For kidney cancer significant increase has been noted in both sexes from the period 1987 -92 to 1993-97.

Highest incidence for cancer of lung is recorded in USA, Louisiana, New Oreians-Black population showing significant decrease in incidence. Highest incidence for non-Hodgkin's disease is recorded by USA-California-SF-Non Hispatic White population and lymohoid leukemia by Canada- Yukon population. There is no significant change in incidence in Non-Hodgkin's disease and lymphoid leukemia in the corresponding population from the period 1987-92 and 1993-97.

Highest incidence for hypopharynx and stomach are recorded by India-Madras population, for stomach by Japan- Yamagata population, for liver cancer by Thailand-Kaen population, for nose, sinuses by USA, New Mexico American population, for bladder cancer by Zimbabwe, Harare- African population, for thyroid USA, Hawaii-Fillipino population, for Kaposi's sarcoma by Uganda-Kyadondo population, for multiple myeloma by USA, Michigan Detroit-Black population. Significant increase in incidence for cancers of Kaposi's sarcoma and multiple myeloma and significant decrease in incidence for cancers of stomach, liver and cervix were observed in the corresponding populations.

Highest incidence for oral and pharyngeal cancers in either sex is recorded by Indian subcontinent populations and France-Bas-Rhin population. These populations showed significant decrease in incidence in both sexes in the 10 year period.

Highest incidence for oesophageal cancer is recorded by China-Cixian population in both sexes in 1993-97 and by Zimbabwe Harare-African population in males in 1993-97 by Uganda-Kyandondo population in females in 1988-92.

Highest incidence for stomach cancer in females is recorded by Japan- Yamagata population in both the time periods and also in males in 1987-92. Stomach cancer incidence showed significant decreasing trend in both sexes.

Highest incidence for colon and rectum in males has been recorded by Japan-Hiroshima population in 1993-97 while in females by Canada-Yukon population in 1988-92. Significant increase in incidence in stomach cancer has been observed in both the cancers over the period of time under consideration.

Highest incidence for laryngeal cancers in males has been recorded by Spanish population while in females by US population in both the period showing no trend in incidence.

Highest incidence for melanoma of skin has been recorded by Australia-Queensland population in both the sexes in 1993-97.

Highest incidence of breast and cervical cancer has been recorded by African population in both the periods.

Highest incidence for prostate cancer has been recorded by the US population, for testis by Switzerland population and for penis by African population in both the time periods showing increasing trends for all the three cancers. Highest incidence for thyroid cancers for males in 1993-97 and for females in both the periods has been recorded by the US population.

Table 1. Age Standardized Cancer Incidence Rate (ASR) per 100,000 population, Number of cases, Population (in 100,000) for a country who has Reported highest incidence in Vol. VII and Vol. VIII for each site, Males

Site	Highest ASR in	Country - Population	Vol. VIII.			Vol. VII.			Vol. VI.		
			ASR	Cases	Pop.	ASR	Cases	Pop.	ASR	Cases	Pop.
Lip	Vol. VIII	Spain-Cuenca	14.3	132	1.0	NA	NA	NA	NA	NA	NA
	Vol. VII	South Australia	8.8	439	7.3	13.5	607	7.1	13.5	568	6.9
Tongue	Vol. VIII	India - Ahmedabad	9.3	599	19.8	NA	NA	NA	14.0	616	15.7
	Vol. VII	France-BasRhin	6.5	190	4.8	8.0	216	4.6	10.2	255	4.5
Mouth	Vol. VIII	India - Trivandrum	9.3	207	5.4	10.8	72	5.2	NA	NA	NA
	Vol. VII	France - BasRhin	9.1	268	4.8	12.4	333	4.6	13.4	327	4.5
Salivary Gland	Vol. VIII	Canada - Northwest	4.0	14	0.3	4.2	10	0.2	NA	NA	NA
	Vol. VII	Canada - Northwest	4.0	14	0.3	4.2	10	0.2	NA	NA	NA
Nasopharynx	Vol. VIII	China-Hongkong	21.4	4075	31.3	24.3	3935	29.4	28.5	4062	28.2
	Vol. VII	China-Hongkong	21.4	4075	31.3	24.3	3935	29.4	28.5	4062	28.2
Hypopharynx	Vol. VIII	France-BasRhin	12.9	380	4.8	13.9	372	4.6	15.2	382	4.5
	Vol. VII	France-Calvados	10.5	202	3.1	15.0	262	3.0	13.4	23	2.9
Oesophagus	Vol. VIII	China-Cixian	183.8	2047	3.0	NA	NA	NA	NA	NA	NA
	Vol. VII	Zimbabwe-Harare(A)	19.3	223	NA	30.4	153	5.3	NA	NA	NA
Stomach	Vol. VIII	China-Changle	145.0	1808	3.5	NA	NA	NA	NA	NA	NA
	Vol. VII	Japan-Yamagata	91.6	5409	6.1	95.5	5071	6.1	93.3	3457	6.1
S-Intestine	Vol. VIII	USA-Lous-Cent-Reg-B	3.7	7	0.4	1.2	2	0.3	NA	NA	NA
	Vol. VII	USA- Detroit Black	2.9	71	4.5	2.5	54	4.3	1.6	36	4.4
Colon	Vol. VIII	Japan-Hiroshima	59.2	2096	5.4	31.6	939	5.2	21.5	507	4.7
	Vol. VII	USA- Detroit Black	30.7	767	4.5	35.0	806	4.3	33.5		4.4
Rectum	Vol. VIII	Japan-Hiroshima	27.4	960	5.4	19.4	576	5.2	16.3	391	4.7
	Vol. VII	Canada-Yukon	19.8	27	0.1	33.7	25	0.1	NA	NA	NA
Liver	Vol. VIII	China-Quidong	95.7	3038	5.8	72.1	2336	5.7	89.9	2381	5.5
	Vol. VII	Thailand-Khonkaen	88.0	2811	8.3	97.5	2119	8.1	90.0	867	9.0
Gall bladder	Vol. VIII	Korea-Busan	9.7	245	19.2	NA	NA	NA	NA	NA	NA
	Vol. VII	Japan-Miyagi	8.1	771	11.4	739	616	11.0	7.2	467	10.7
Pancreas	Vol. VIII	USA-Connecticut(B)	14.7	81	11.4	8.3	42	11.0	10.8	53	0.1
	Vol. VII	USA-Cent Louisiana(B)	12.0	23	0.4	20.8	38	0.3	NA	NA	NA
Nose sinus	Vol. VIII	Argentina-Concordio	1.7	5	0.7	1.7	4	0.6	NA	NA	NA
	Vol. VII	Zimbabwe-Harare(E)	NA	NA	NA	3.1	3	0.2	NA	NA	NA
Larynx	Vol. VIII	Spain-Zaragoza	18.0	558	4.1	17.1	508	4.1	16.1	271	4.0
	Vol. VII	Spain-Basque Count	NA	NA	NA	18.2	986	10.4	20.4	522	10.8
Lung	Vol. VIII	USA-Lousiana New-B	107.0	824	1.7	110.8	842	1.8	115.9	864	0.2
	Vol. VII	USA-New Orleans-B	107.0	824	1.7	110.8	842	1.8	115.9	864	0.2
Oth.Thoracic	Vol. VIII	Poland-Lower Silesia	2.3	181	14.1	2.6	193	14.1	1.9	60	14.1
	Vol. VII	Italy-Trieste	NA	NA	NA	3.3	29	1.2	NA	NA	NA
Bone	Vol. VIII	Italy-Ferrara Province	3.3	24	1.7	0.9	5	1.7	NA	NA	NA
	Vol. VII	Brazil-Porto Algre	NA	NA	NA	3.6	57	5.9	2.0	12	6.1
Melanoma Skin	Vol. VIII	Australia-Queensland	51.1	5156	16.2	NA	NA	NA	NA	NA	NA
	Vol. VII	Australia-NewSth Wales	36.9	7308	30.5	33.1	5865	29.1	25.9	4095	27.3
Mesothelioma	Vol. VIII	Italy-Genoa Province	5.4	206	4.4	5.0	161	3.3	NA	NA	NA
	Vol. VII	Italy-Trieste	NA	NA	NA	6.4	63	1.2	NA	NA	NA

Table 1. contd....

Site	Highest ASR in	Country - Population	Vol. VIII			Vol. VII.			Vol. VI.		
			ASR	Cases	Pop.	ASR	Cases	Pop.	ASR	Cases	Pop.
Kaposi Sarcoma	Vol. VIII	Zimbabwe-Harare-A	50.8	1555	6.8	24.6	380	5.4	NA	NA	NA
	Vol. VII	Uganda-Kyadonda	37.9	843	5.6	43.5	524	5.1	NA	NA	NA
Con & Soft tissue	Vol. VIII	USA-connecticut (B)	5.3	9	0.4	2.6	4	0.4	NA	NA	NA
	Vol. VII	Zimbabwe-Harare (E)	NA	NA	NA	6.9	6	0.2	NA	NA	NA
Penis	Vol. VIII	Uganda-KyandonodCtry	4.0	34	5.6	2.8	13	5.1	NA	NA	NA
	Vol. VII	India-Barshi	NA	NA	NA	3.3	29	2.3	NA	NA	NA
Prostate	Vol. VIII	USA-Michigan-Detr-B	202.0	4919	4.5	141.5	3397	4.3	94.1	2210	4.3
	Vol. VII	USA-Atlanta (B)	181.5	2039	4.0	142.3	1235	3.1	102.0	832	2.6
Testis	Vol. VIII	Switzerland-Zurich	10.1	283	5.7	8.9	301	5.6	8.8	286	
	Vol. VII	Switzerland-Granbunden	7.1	45	1.1	10.3	36	0.9	NA	NA	NA
Bladder	Vol. VIII	Belgium-Limburg	42.5	497	4.0	NA	NA	NA	NA	NA	NA
	Vol. VII	Italy-Trieste	NA	NA	NA	38.7	451	1.2	34.0	181	1.3
Eye	Vol. VIII	Uganda-KyandonodCtry	2.9	76	5.6	2.3	30	5.0	NA	NA	NA
	Vol. VII	Zimbabwe-Harare (E)	NA	NA	NA	4.1	3	0.2	NA	NA	NA
Brain, NS	Vol. VIII	Croatia	9.3	1270	22.3	8.5	905	22.9	NA	NA	NA
	Vol. VII	Zimbabwe-Harare (E)	NA	NA	NA	14.8	11	0.2	NA	NA	NA
Thyroid	Vol. VIII	USA-Cali-LA-Fillipona	5.0	33	1.3	4.0	22	1.0	4.6	17	0.8
	Vol. VII	Iceland	4.3	36	1.3	6.1	44	1.2	6.2	40	1.2
Hod.Disease	Vol. VIII	Argentina-Bahia,Blanca	4.3	43	1.9	NA	NA	NA	NA	NA	NA
	Vol. VII	Canada-Yukon	3.1	5	0.1	7.9	8	0.1	NA	NA	NA
Non.Hod.Dis.	Vol. VIII	USA-Cali,SF,NonHis W	24.6	1871	10.2	25.0	1906	10.7	NA	NA	NA
	Vol. VII	US-SF,Non Hisp (W)	24.6	1871	10.2	25.0	1906	10.7	NA	NA	NA
Mult.Myeloma	Vol. VIII	USA-connecticut(B)	9.6	53	1.4	7.0	34	1.3	6.7	34	1.4
	Vol. VII	USA-LA-Black	7.1	166	4.8	9.5	212	5.0	7.8	166	4.7
Lymph.Leuk	Vol. VIII	Canada-Yukon	9.4	16	0.1	9.6	11	0.1	NA	NA	NA
	Vol. VII	Canada-Yukon	9.4	16	0.1	9.6	11	0.1	NA	NA	NA
Myeloid.Leuk	Vol. VIII	USA-Hawaii-Fillipino	8.5	46	0.9	4.3	39	0.8	5.8	25	0.6
	Vol. VII	USA-LA-(B)	3.9	93	4.8	4.4	108	5.0	2.7	60	4.7
Kidney	Vol. VIII	Czech Republic	20.0	6687	50.1	16.9	5310	50.2	NA	NA	NA
	Vol. VII	Czech Republic	20.0	6687	50.1	16.9	5310	50.2	NA	NA	NA
All sites Exclude Skin	Vol. VIII	USA-Michigan-Detr-B	517.4	12471	4.5	464.2	10506	4.3	404.4	8962	4.4
	Vol. VII	USA-SF (B)	424.5	4995	2.3	465.4	4837	2.1	NA	NA	NA

- Source: 1. Cancer Incidence in five continents, Vol VI, IARC, Lyon, France, 1992.
2. Cancer Incidence in five continents, Vol VII, IARC, Lyon, France, 1997.
3. Cancer Incidence in five continents, Vol VIII, IARC, Lyon, France, 2002.

Table 2. Age Standardized Cancer Incidence Rate (ASR) per 100,000 population, Number of cases, Population (in 100,000) for a country who has Reported highest incidence in Vol. VII and Vol. VIII for each site, Females.

Site	Highest ASR in	Country - Population	Vol. VIII			Vol. VII.			Vol. VI.		
			ASR	Cases	Pop.	ASR	Cases	Pop.	ASR	Cases	Pop.
Lip	Vol. VIII	Canada-Yukon	3.1	4	0.1	1.6	1	0.1	NA	NA	NA
	Vol. VII	South Australia	2.5	160	7.4	3.2	200	7.2	2.5	135	6.9
Tongue	Vol. VIII	Pakistan-South Karachi	4.9	57	7.6	NA	NA	NA	NA	NA	NA
	Vol. VII	India-Karunagappally	1.7	16	2.0	3.7	14	1.9	NA	NA	NA
Mouth	Vol. VIII	Pakistan-South Karachi	9.2	108	7.6	NA	NA	NA	NA	NA	NA
	Vol. VII	India-Bangalore	7.5	515	22.7	8.9	534	18.9	9.6	434	15.9
Salivary gland	Vol. VIII	Canada-NW Territories	3.8	9	0.2	2.0	3	0.2	NA	NA	NA
	Vol. VII	Canada-NW Territories	3.8	9	0.2	2.0	3	0.2	NA	NA	NA
Nasopharynx	Vol. VIII	Hongkong	8.3	1560	31.0	9.5	1462	28.0	11.2	1499	26.4
	Vol. VII	Hongkong	8.3	1560	31.0	9.5	1462	28.0	11.2	1499	26.4
Hypopharynx	Vol. VIII	India-Madras	1.9	143	19.3	2.4	164	18.3	1.9	126	16.8
	Vol. VII	India-Madras	1.9	143	19.3	2.4	164	18.3	1.9	126	16.8
Oesophagus	Vol. VIII	China-Cixian	123.1	1536	2.9	NA	NA	NA	NA	NA	NA
	Vol. VII	Uganda-Kyadondo	12.2	91	5.8	8.7	37	5.3	NA	NA	NA
Stomach	Vol. VIII	Japan-Yamagata	38.9	3055	6.5	40.1	2813	6.5	42.9	2052	6.5
	Vol. VII	Japan-Yamagata	38.9	3055	6.5	40.1	2813	6.5	42.9	2052	6.5
S-Intestine	Vol. VIII	USA-Michigan, Detr-B	2.1	68	5.4	1.2	41	5.1	1.1	31	5.1
	Vol. VII	USA-Conn(B)	1.9	16	1.5	1.5	11	1.5	1.4	9	1.5
Colon	Vol. VIII	NewZealand	28.6	4132	18.5	NA	NA	NA	NA	NA	NA
	Vol. VII	NewZealand,NonMaori	NA	NA	NA	29.6	3650	15.2	30.5	3398	15.0
Rectum	Vol. VIII	Singapore Chinese	12.1	787	11.4	10.3	561	10.4	10.5	477	9.5
	Vol. VII	Canada-Yukon	10.2	14	0.1	14.4	12	0.1	NA	NA	NA
Liver	Vol. VIII	Thailand-Khonkaen	35.4	1240	8.3	39.0	927	8.1	38.3	368	8.0
	Vol. VII	Thailand-Khonkaen	35.4	1240	8.3	39.0	927	8.1	38.3	368	8.0
Gall bladder	Vol. VIII	India-Delhi	9.4	956	44.7	NA	NA	NA	NA	NA	NA
	Vol. VII	USA-NexMexicoAmer.Ind	5.1	18	0.7	12.5	35	0.7	NA	NA	NA
Pancreas	Vol. VIII	USA-Connecticut-Black	9.5	80	1.5	8.0	60	1.4	7.3	50	1.5
	Vol. VII	USA-San Francisco-Black	9.3	155	2.4	11.0	159	2.2	11.6	149	2.2
Nose sinus	Vol. VIII	USA-NexMexicoAmer.Ind	1.1	4	0.7	1.5	5	0.7	NA	NA	NA
	Vol. VII	USA-NexMexicoAmer.Ind	1.1	4	0.7	1.5	5	0.7	NA	NA	NA
Larynx	Vol. VIII	USA-Connecticut-Black	2.8	21	1.5	1.9	12	1.5	3.4	21	1.5
	Vol. VII	USA-Detroit - Black	2.2	65	5.4	2.9	75	5.1	2.6	65	5.1
Lung	Vol. VIII	Canada - NW Territories	72.0	145	0.2	65.6	80	0.2	NA	NA	NA
	Vol. VII	New Zealand - Maori	NA	NA	NA	72.9	326	1.6	62.2	229	1.5
Oth.Thoracic	Vol. VIII	Poland-Lower Silesia	1.0	111	15.0	1.2	127	1.5	0.6	23	8.2
	Vol. VII	Argentina - Concordia	0.0	0	0.7	2.9	10	0.7	NA	NA	NA
Bone	Vol. VIII	China - Tianjin Wuhan	1.7	210	18.4	1.8	182	17.6	1.6	134	16.2
	Vol. VII	Switzerland - Grabunden	0.6	4	1.1	2.2	7	0.8	NA	NA	NA
Melanoma Skin	Vol. VIII	Australia-Queensland	38.1	390	16.3	NA	NA	NA	NA	NA	NA
	Vol. VII	New Zealand, Non-Maori	NA	NA	NA	29.8	2803	15.3	23.0	2053	15.0
Mesothelioma	Vol. VIII	Italy-Genoa Prov.	1.2	60	4.9	0.9	40	3.7	NA	NA	NA
	Vol. VII	Argentina Concordia	0.8	3	0.7	0.9	3	0.7	NA	NA	NA

Table 2. contd....

Site	Highest ASR in	Country - Population	Vol. VIII.			Vol. VII.			Vol. VI.		
			ASR	Cases	Pop.	ASR	Cases	Pop.	ASR	Cases	Pop.
Kaposi Sarcoma	Vol. VIII	Uganda-Kyadonda	20.4	533	5.8	18.0	260	5.3	NA	NA	NA
	Vol. VII	Uganda-Kyadonda	20.4	533	5.8	18.0	260	5.3	NA	NA	NA
Conn. & Soft tissue	Vol. VIII	Italy - Biella	4.0	17	0.9	NA	NA	NA	NA	NA	NA
	Vol. VII	Switzerland - Voalais	1.9	18	1.4	3.2	21	1.3	NA	NA	NA
Breast	Vol. VIII	Uruguay - Montevideo	114.9	3679	7.1	NA	NA	NA	NA	NA	NA
	Vol. VII	Zimbabwe-Harare (E)	NA	NA	NA	127.7	135	0.2	NA	NA	NA
Cervix	Vol. VIII	Zimbabwe-Harare	NA	NA	NA	67.2	292	4.8	NA	NA	NA
	Vol. VII	Zimbabwe-Harare	NA	NA	NA	67.2	292	4.8	NA	NA	NA
Ovary	Vol. VIII	Iceland	16.2	130	1.3	10.9	89	1.3	96.6	118	12.0
	Vol. VII	Canada-Yukon	14.3	24	0.1	19.9	17	0.1	NA	NA	NA
Kidney	Vol. VIII	Czech Republic	10.2	4526	53.1	8.5	3516	53.2	NA	NA	NA
	Vol. VII	Czech Republic	10.2	4526	53.1	8.5	3516	53.2	NA	NA	NA
Bladder	Vol. VIII	Zimbabwe-Harare (A)	NA	NA	NA	12.5	43	4.8	NA	NA	NA
	Vol. VII	Zimbabwe-Harare (A)	NA	NA	NA	12.5	43	4.8	NA	NA	NA
Eye	Vol. VIII	Zimbabwe-Harare (A)	NA	NA	NA	0.4	8	4.8	NA	NA	NA
	Vol. VII	Uganda - Kyandonad	2.8	64	5.8	1.8	2.8	5.3	NA	NA	NA
Brain, NS	Vol. VIII	Italy - Sassari	7.1	125	2.4	NA	NA	NA	NA	NA	NA
	Vol. VII	Zimbabwe-Harare (E)	NA	NA	NA	11.4	11	0.2	NA	NA	NA
Thyroid	Vol. VIII	US-Hawaii: Filipino	19.4	97	0.8	25.5	115	0.8	24.2	78	0.6
	Vol. VII	US-Hawaii: Filipino	19.4	97	0.8	25.5	115	0.8	24.2	78	0.6
Hod.Disease	Vol. VIII	Italy - Biello	4.6	12	0.9	NA	NA	NA	NA	NA	NA
	Vol. VII	Canada-Yukon	2.7	6	0.1	4.1	6	0.1	NA	NA	NA
Non.Hod.Dis.	Vol. VIII	Belgium - Limburg	13.1	163	4.0	NA	NA	NA	NA	NA	NA
	Vol. VII	Italy - Ferrara	8.5	181	1.9	11.5	94	1.9	NA	NA	NA
Lymph.Leuk	Vol. VIII	Italy - Biello	5.6	22	0.9	NA	NA	NA	NA	NA	NA
	Vol. VII	Canada-Yukon	2.8	4	0.1	11.1	10	0.1	NA	NA	NA
Myeloid.Leuk	Vol. VIII	Australia - Northern Terri	5.7	16	0.8	NA	NA	NA	NA	NA	NA
	Vol. VII	NewZealand - Maori	NA	NA	NA	4.5	30	1.6	4.9	27	1.5
Mult.Myeloma	Vol. VIII	US - Michigan, Detr-B	7.1	248	5.4	6.4	208	5.1	5.6	164	3.1
	Vol. VII	US - Michigan, Detr-B	7.1	248	5.4	6.4	208	5.1	5.6	164	3.1
All sites Exclude Skin	Vol. VIII	SanFrans-Nonhod.Dise	313.2	29112	10.4	305.4	28968	10.9	NA	NA	NA
	Vol. VII	New Zealand - Maori	NA	NA	NA	339.7	1734	1.6	317.5	1357	1.5

Source : 1. Cancer Incidence in five continents, Vol VI, IARC, Lyon, France, 1992.
 2. Cancer Incidence in five continents, Vol VII, IARC, Lyon, France, 1997.
 3. Cancer Incidence in five continents, Vol VIII, IARC, Lyon, France, 2002.

Highlights from cancer registries

Hospital based cancer registry, Mumbai

Population based cancer registry, Mumbai

Hospital based cancer registry, Bangalore

Hospital and population based cancer registry, Chennai

Population based cancer registry, Barshi

Hospital based cancer registry, Thiruvananthapuram

Population based cancer registry, Kolkata

Population based cancer registry, Ahmedabad

Population based cancer registry, Sikkim

Population based cancer registry, Guwahati

HOSPITAL BASED CANCER REGISTRY

Tata Memorial Hospital, Parel, Mumbai- 400 012

Principal Investigator : Dr. K.A. Dinshaw, Director

Officer-in-charge : Mr. D Nagaraj Rao

Ongoing Epidemiological Studies

End result study of head & neck, breast and cervical cancers

The cancer registry has undertaken an end result study of three major sites viz. head and neck, breast and cervical cancers. The study included 13,448 head and neck cancers treated during the year 1991-1996, 8418 breast and 6981 cervical cancers treated during 1991-1998. The objective of the study is to calculate five year relative survival rate according to the various prognostic factors such as age, sex, geographical location, stage of the disease and type of treatment. To get follow up information, efforts are made to send follow up letters to all patients who were lost to follow up. Apart from that, scrutiny of death records of Mumbai Municipal Corporation, use of telephone and e-mail addresses wherever available is being used to increase follow up rate.

Retirement

Mrs. Josephine Jose has retired from service on 30th April 2004. She has contributed greatly in cancer registry activity and her meritorious service for the success of cancer registry at Tata Memorial Hospital is acknowledged.

Recent Publications

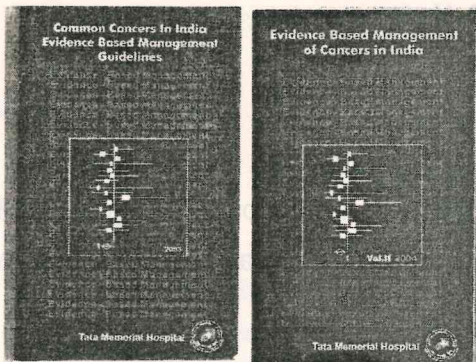


Fig-1: Volume I. Editors:Dr.Rajiv Sarin, Dr.Rajan Badwe and Dr. Ketayun A Dinshaw.

Fig-2:Volume II.Editors:Dr.S.K.Shrivastava, Dr.P.M.Parikh, Dr.A.Puri, Dr.S.Laskar and Dr.Ketayun A.Dinshaw

The Tata Memorial Hospital (TMH) has published two volumes of book titled as evidence based management (EBM) of common cancers in India. The first volume contains topics on (1) Breast Cancer (2) Head & Neck Cancer (3) Gynecological Cancer and (4) Gastrointestinal Cancer.

The objectives of the document is to provide general guidelines and promote the practice of EBM while taking into account the scientific quality of evidence; resources or expertise available at the TMH; patient's performance status and their expected patient compliance.

The second volume contains topics on (1) Bone & soft tissues (2) Pediatric brain tumors and (3) Pediatric solid tumors. Site specific multidisciplinary groups comprising surgical, radiation and medical oncologists, radiologists, pathologists and other supporting specialties have formulated each of the guidelines in this manual. Copies are available for interested oncologists and other specialists engaged in oncology service.

POPULATION BASED CANCER REGISTRY, MUMBAI

Indian Cancer Society, Parel, Mumbai – 400 012.

Principal Investigator : *Dr. A.P. Kurkure*

Co investigator : *Dr. B.B. Yeole*

Honors and Distinctions

1. Dr. B.B. Yeole, Deputy director, received the prestigious “Advani-Braganza oration award” for his epidemiological work in cancer, from Association of Medical Women in India on 30th August, 2003 at Mumbai. At this function he delivered a lecture on “Epidemiological assessment of cancers in women in India with particular reference to cancers of breast and cervix”.
2. Dr. B.B. Yeole’s bio-data with life-time achievements appeared in Reference Asia, Asia’s WHO’s WHO of men and women of achievements, revised edition, and volume I published by Rifacimento international, New Delhi, 2004.

Meetings/ Workshops/Training

1. Dr. B.B. Yeole, attended a workshop on rare cancers in India at the National Cancer Institute, Washington, USA organized during 22-26 September 2003 and delivered an invited lecture on “Epidemiological assessment of kidney and bladder cancers in India”.
2. Dr. B.B. Yeole attended a seminar on Epidemiology – principles and methods at the department of health services, University of Pune on 11th February 2004, and delivered an invited lecture on “Functions, workings and uses of population based cancer registries in National Cancer Control Programme”.
3. Dr. B.B. Yeole attended Annual review meeting of cancer registries and workshop of national cancer registry programme organized by the Cancer Research Institute, Chennai during 11-14 November 2004 and presented the findings of Mumbai cancer registry data for the year 2000. At this meeting he also delivered a lecture on historical background and findings based on the data collected by Pune, Nagpur and Aurangabad cancer registries.
4. Mr. Atul Pawar, Biostatistician, Mumbai cancer registry, Ms. Swapna Methar, Computer assistant, Mumbai cancer registry, Ms. R.K. Kamble, Investigator, Nagpur cancer registry, Mrs. R.A. Ingole, Investigator, Nagpur cancer registry, Mr. A.M. Wagmare, Medical social investigator, Nagpur cancer registry and Mrs. Kavita Jadhav, Graduate Assistant, Pune cancer registry, participated the workshop of National Cancer Registry Programme organized by the Cancer Research Institute, Chennai during 11-14 November 2004.

5. Mrs. Kalpana Puranik, Research assistant, Mumbai cancer registry, attended the international summer school programme on cancer registration and application in Epidemiology organized by International Agency for Research on Cancer, at Lyon, France from 26th May to 10th June 2003.
6. Dr. B.B. Yeole, attended course on "Advances in cancer epidemiology" held at International Agency for Research on Cancer, Lyon, France from 18 - 23, May 2003.

Visitors from abroad

1. Dr. Max Parkin, Chief, Descriptive unit of International Agency for Research on Cancer, Lyon, France, on 2nd March 2004.
2. Dr. Eberhard Greiser, Director and professor of medical statistics and epidemiology, Bremen University, Germany on 15th February 2004.
3. A team from American cancer society, consisting of Nathan Gray, Vice President, Shalini Vallabhan- Director, Policy Research, Dilip Bal, Chief, Cancer Control Branch and others visited on 17th February 2004.
4. A team of cancer research workers-Dr. Supanee Sriamporn and 4 other scientists from Thailand visited Mumbai registry for cancer registration training on 10th March 2003.
5. Dr. Buncha Palanuwing, a participant in the international summer school course from Thailand from 25- 28 April 2004 for training in cancer registration.

Ongoing Research Projects

1. Population-based survival rates for major sites registered during 1995-1999 in Mumbai cancer registry (Collaborators: International Agency for Research on Cancer, Lyon, France).
2. Development of Cancer Atlas for India (Collaborators: NCRP, ICMR & WHO)

Future Projects

Aurangabad Cancer Registry data entry in CANREG-4 system (Collaborators: International Agency for Research on Cancer, Lyon, France).

Other Research Activities

Dr. Preet Dhillon from Fred Hutchinson, Cancer Research Center, Seattle, Washington was awarded Post-Doctoral Research Training Fellowship by the International Agency for Research on Cancer, Lyon, France to work with Dr.B.B.Yeole, Mumbai Cancer Registry. She will work on cancer incidence trends in Mumbai for major sites for the period 1976-2000.

Coming and going

Mr. Santosh Dubal, has been appointed as medical social worker from 1st January 2004.

Ms. Sujata Gavandi, has been appointed as medical social worker from 1st January 2004.

Mr. Kishor Salvi, has been appointed as medical social worker from 1st March 2004.

Mr. Jijo K.J., has been appointed as medical social worker from 1st August 2003.

Mrs. R.A.Sarkar, senior medical social worker has been resigned on 31st December 2003.

Mrs. Indu Joshi, senior medical social worker has been resigned on 7th October 2003.

Mrs. Lalitha Rajan, senior medical social worker has been resigned on 31st March 2004.

Mr. Jijo K.J., medical social worker has been resigned on 23rd December 2003.

Publications

1. B.B.Yeole, A.V.Ramanakumar and R. Sankaranarayanan. Survival from oral cancer in Mumbai (Bombay) in India. Cancer Causes and Control 14 : 945-952, 2003.
2. N.M.Kavarana, M.R.Kamat, A.P.Kurkure, B.B.Yeole and Lizzy Sunny. Cancer morbidity and mortality in greater Mumbai 2000, Indian Cancer Society, 2003.
3. B.B.Yeole. Objectives, functioning and utility of population based cancer registry, Souvenir, Cancer Institute, Adyar, Chennai. XIX Annual review meeting & workshop, NCRP-ICMR, 2003.

HOSPITAL BASED CANCER REGISTRY
Kidwai Memorial Institute of Oncology, Bangalore

Principal Investigator : *Dr. P.S. Prabhakaran, Director*
Co investigator : *Dr. K Ramachandra Reddy*

WARD OF Ph.D DEGREE



Mr. K. Ramachandra Reddy, Professor of biostatistics and cancer registry, Kidwai Memorial Institute of Oncology, Bangalore, has been awarded the degree of Philosophy in Epidemiology by the Faculty of Medicine, University of Tampere, Finland, for the research work entitled "Role of socioeconomic status and reproductive factors in breast cancer: A case-control study".

HOSPITAL & POPULATION BASED CANCER REGISTRY –CHENNAI

Cancer Institute (W.I.A.), Chennai

Principal Investigator : Dr. V Shanta, Chairman

Co Investigator : Dr. R Swaminathan

Ongoing projects

1. "Development of an Atlas of Cancer in India: Year 2003" – A project of National Cancer Registry Programme (ICMR) – Supported by WHO.
 - a) Registration of non resident cancer cases from Population Based Cancer Registry (PBCR) – about 7,000 cases each year
 - b) Registration of non Chennai cancer cases from Hospital Based Cancer Registry (HBCR), Cancer Institute (W.I.A.) – about 7,000 cases each year
2. "Estimation of population-based cancer survival rates for top ten cancers in Chennai – Year 1990-1999" – A survival study in collaboration with International Agency for Research on Cancer, Lyon, France.
3. Hospital based cancer registry survival study on top ranking cancers treated at the Cancer Institute (W.I.A) during the period 1960-1999. – A survival study in collaboration with International Agency for Research on Cancer, Lyon, France.
4. Dindigul Ambilikkai Cancer Registry (DACR) – A project in collaboration with the International Agency for Research on Cancer, Lyon, France to systemically undertake registration of cancer cases from the entire district of Dindigul in Tamil Nadu.
5. Population screening program for cancers of cervix, breast and oral cavity in Thiruvanmiyur area in Chennai – A project in collaboration with World Health Organization, New Delhi- Dr. R.Swaminathan, Co-investigator.
6. Hereditary cancer registry project – A population based registry, Department of molecular oncology, Cancer institute (W.I.A)- Dr. R. Swaminathan, Co-investigator.

Workshop/ Observation Training on "Cancer Registration, Principles and Methods" organized by the division of Epidemiology & Cancer registry.

1. Observation training for 2 registry personnel from Kamala Nehru Cancer Hospital, Regional Cancer Centre, Allahabad during 19-23 January 2004.

2. Observation training for 2 delegates, Dr, Eric Zomawia Colbert, Principal Investigator, Population Based Cancer Registry, Mizoram and Dr. Jayalekshmi, Co-Principal Investigator, Karunagapally Cancer Registry during 10-12 May 2004
3. Observation training for 2 delegates, Dr. Veena Kamath, Cancer Registry, Manipal and Dr. Kalavathy Elango, Chief, Cancer Registry from Amrita Institute of Medical Sciences, Cochin during 21-25 June 2004.
4. Organised national level workshop on "Cancer Registration: Principles & Methods" under the auspices of the National Cancer Registry Programme of the Indian Council of Medical Research (ICMR), New Delhi, during 11-12 November 2003. – Attended by 100 delegates from cancer registries all over India.
 - I. Dr. Swaminathan gave an overview of Madras Metropolitan Tumour Registry (MMTR) and discussed the operational strategies for improving the quality of registration.
 - II. Dr. Nalini, conducted the coding exercises on topography, morphology and clinical extent of disease.
 - III. Mrs R. Rama spoke on the functions of HBCR at the Cancer Institute.
 - IV. Ms. Kavitha dealt with the statistical methods in cancer registration and exercises

Annual Review Meeting (ARM) of Cancer Registries

Organized XIX Annual Review Meeting of Cancer Registries in India, under the auspices of the National Cancer Registry Programme of the Indian Council of Medical Research (ICMR), New Delhi, during 13-14 November 2003.

On this occasion, a souvenir was brought out commemorating the twenty years of existence of MMTR, the PBCR in Chennai. It contained 'six' invited articles from eminent researchers in the field, besides a brief note on the registry and research activities carried out at the institute. Dr. Usha K. Luthra, Special Adviser on Cancer Research, ICMR, who was instrumental in founding of the National Cancer Registry Programme in the country, released the Souvenir. The ARM had participants from Cancer Registries outside the NCRP network too and the attendances exceeded 125.

Dr. Swaminathan spoke on

1. Cancer incidence and mortality in Chennai, India: 1999-2000
2. Results of the feasibility study on Patterns of care and survival from cancers of the cervix and female breast, based on retrospective hospital cancer registry data for cases registered in 1997-1998 and followed through 2002.

Workshops/ Seminars/ Courses attended by registry staff

1. Meeting of the investigators for the development of a document on cancer, currently in 2004 and in the year 2015, called "Cancer vision 2015" – Dr.R.Swaminathan attended the meeting in Thiruvananthapuram, August 2004.
2. International Network for Cancer Treatment and Research (INCTR) protocol implementation meeting held at Tata Memorial Hospital, Mumbai on 14th July 2004 - Mr. Devarajan, Systems Analyst, Division of Epidemiology and Cancer Registry took part in the video conferencing between the delegates in India and Ian Magrath and colleagues in Brussels, Begium.
3. "Cancer Awareness Exhibition" 19-21 June 2004 organized by the Cancer Institute (W.I.A), Chennai– Dr. Swaminathan was a 'panelist' in the interactive session with the general public.
4. Training workshop on Oncology for Medical Graduates and interns on June 12-13, 2004 held at the Cancer Institute (W.I.A), Chennai – Dr. Swaminathan gave a lecture on "Some Descriptive Statistics and Epidemiological Terms in Cancer".
5. "Short course on Bio-Statistics - Logistic Regression and Survival Analysis" held at the Department of Biostatistics, Christian Medical College, Vellore during 7-11 June 2004 - Mrs. Rama, Statistical Assistant, attended the course.
6. Seminar on "Recent Developments in Reliability & Biostatistics" organized by the Department of Statistics, University of Madras, Chennai from 26-27 March 2004.
Dr.Swaminathan lectured on "Period survival analysis: An innovative approach"
Ms. Rama & Ms Kavitha attended the seminar.
7. CME Program for Referring Doctors held at Cancer Institute (W.I.A) on 20th March 2004 - Dr. Swaminathan, spoke on "Common cancers in India: Incidence & Trend".
8. "The non-resident workshop on 'Research Methodology & Bio-Statistics' from 23-27 Feb 2004, conducted by the Department of Epidemiology of Dr. MGR Medical University, Chennai – Dr Nalini, Tutor attended the workshop.
9. International Workshop on "Update on acute lymphoblastic leukemia" held at Cancer Institute (W.I.A.) 9-10 Feb 2004"
 - I. A population based survival study of childhood (0-14) acute lymphoblastic leukemia in Chennai, India" – Poster Presentation by Mrs. Rama R
 - II. "Global incidence of childhood (0-14 years) acute lymphoblastic leukemia" – Poster Presentation by Mr. Devarajan S.

Dr. Swaminathan & Dr. Nalini participated the workshop.

10. NCRP (ICMR) – WHO Workshops on “Patterns of care & survival studies in cancers of head & neck, breast and cervix” held at Bangalore during Jan 19-24 2004.
 - I. Dr. Swaminathan participated in the workshop from Jan 21-23 2004 on cancers of breast and cervix and chaired the sessions on group discussion: “Strategy for short & long term follow up”.
 - II. Ms. Rama participated in the workshop from Jan 19-20, 2004 on cancer of head & neck and chaired the session on group discussion: “Strategy for short & long term follow up”
 - III. Ms. Shanthi, Social Investigator participated in the workshop from Jan 19-23, Jan 2004
11. Training program on Controlled Clinical Trial conducted by the National Institute of Epidemiology, ICMR, Chennai during December 15-19, 2003 - Dr. Nalini attended the training program.
12. WHO Workshop on Community Based Oncology Program” held at the Regional Cancer Centre, Patna, during Nov 29-30, 2003- Dr. Swaminathan was an Invited speaker on the “System of active follow up at Cancer Institute (W.I.A), Chennai” and presented the results of the “Modified District Cancer Control Program” conducted at Tiruchi & Perambalur districts in Tamil Nadu in 2001-2002.
13. Workshop on “Current trends in bio-statistics” organized by the Madurai Kamaraj University, Madurai on 1st October 2003.

Dr. Swaminathan was an invited speaker on “Recent developments in methods for cancer survival analysis”, Ms. Kavitha attended the workshop.
14. The international course on “Cancer epidemiology: principles and methods” organized by the international agency for research on cancer, France, held at Thiruvananthapuram during 1-12 September 2003 - Mrs. Rama attended the course.

Visit of researchers from abroad

1. Dr. D.M.Parkin, Chief, Unit of Descriptive Epidemiology (DEP), International Agency for Research on Cancer (IARC), France & Dr.R.Sankaranaraynan (DEP) on 5th March 2004 for review of existing projects and sanctioning new projects in the Division of Epidemiology and Cancer Registry, Cancer Institute.
2. Dr.Petcharin Srivatanakul, Deputy Director (Knowledge and Transfer) of National Cancer Institute, Bangkok, Dr. Prasit Pengsaa, Chief of the Cancer unit and Gynecological Oncology, Mrs. Siripon Mongkhonthawornchai, senior oncology nurse of Srinagarind Hospital, University of Khon Kaen,

and Dr.Supanee Sriampon, Department of Epidemiology, Faculty of Public Health, Khon Kaen on 4th March 2004.

3. Prof. Sharmila Mukhiic, Gynecologist, NCI, Houston, Texas in February 2004 for exploring the possibility of collaborative studies.

Publications

1. Swaminathan R, Shanta V, Rama R. Cancer registration, pattern and trend in India in the last two decades. *Indian Journal of Clinical Practices (Oncology Update)*, 2004.
2. Sriamporn S, Swaminathan R, Parkin DM, Kamsa-Ard S, Hakama M. Loss-adjusted survival of cervix cancer in Khon Kaen, Northeast Thailand. *British Journal of Cancer* 2004; 91: 160-110.
3. Swaminathan R. "The Cancer Registries, Chennai Region" – Five decades of the Cancer Institute (W.I.A). *Published on the occasion of its Golden Jubilee, Feb 2004.*
4. Shanta V, Swaminathan R, Rama R. Cancer Institute (W.I.A), Chennai: The seat of Hospital and Population Based Cancer Registries – "Souvenir" of XIX Annual Review Meeting & Workshop, National Cancer Registry Programme, *Indian Council of Medical Research, Nov 2003.*
5. Report on "Equity in survival from cancers of the cervix and oral cavity in Chennai, India" – A project under the Ministry of Statistics and Program Implementation, Govt. of India, New Delhi undertaken by the Department of Statistics, University of Madras, Chennai – Consultant: Dr. R Swaminathan.
6. Shanta V, Gajalakshmi V, Swaminathan R. India, Chennai (Madras). In: *Cancer Incidence in Five Continents, Vol. VIII. (eds) Parkin DM, Whelan SL, Ferlay J, Teppo L and Thomas DB. (2002), IARC Scientific Publications No. 155, Lyon, IARC. pp 236-237.*

POPULATION BASED CANCER REGISTRY, BARSHI
(Barshi, Paranda and Bhum) Under - Tata Memorial Hospital, Mumbai
and Nargis Dutt Memorial Cancer Hospital, Barshi

Principal Investigator *Dr. K.A. Dinshaw, Director, TMH, Mumbai*

Co-Principal Investigator *Dr. B.M. Nene, Chairman, NDMCH.*

The rural cancer registry: Barshi, Paranda & Bhum which was set up in 1987 is the first rural cancer registry in the country. The Barshi Rural Cancer Registry comprises rural areas of 3 tehsils of Western Maharashtra in the vicinity of Nargis Dutt Memorial Cancer Hospital (NDMCH) and is spread over 3713 sq. kms. with a population of about 0.5 million. Since its inception in 1988, the same methodology viz., identifying cases in the community in addition to the usual urban approach of diagnostic centers is being followed. Since 1988, 34 centers were visited for collection of data. Now it has increased to 75. Currently CANREG-4 is installed and will be using this software for analysis of data.

Special activities undertaken by the registry for improvement of cancer registration are as follows:

1. Cancer Quiz Programme in Schools

We are conducting "Cancer Quiz Programme" for the IX & X standard school students since 1998. 2363 school boys and 1,502 school girls have been participated in the 39 quiz programmes held up to 2003. This programme is popular and seems to generate cancer awareness in adults also.

2. Mega Clinics

Since 2001, in addition to the zonal clinics we are organizing large cancer detection clinics once a year in areas where number of cases are suspected to be low. We seek the cooperation of local NGOs to get greater publicity. The clinics are conducted by oncologists unlike zonal clinics, which are generally conducted by junior medical staff. In 2003, we conducted mega clinic in Paranda Tehsil, village Anala which has a PHC, 190 patients attended, 5 new cancer cases were diagnosed. This was helpful in improving cancer registration.

3. Cancer Survey of the Population (Sample Survey)

In 2002, we conducted house-to-house survey in 10% random sample of villages of each tehsil of the registry. The field investigators were asked to make detailed enquiries regarding the following.

- Living cancer cases
- Deaths due to cancer
- Symptoms of cancer/health status

The information was recorded during household visit of a population of 49,218 from 9983 household. The follow up survey was conducted in the following year also. The birth, death and migrations were recorded in the follow up survey. Data is being analyzed.

Awards

Dr. B. M. Nene, Co-Principal Investigator received a National Award from the Department of Science & Technology, Govt. of India for Application of Science and Technology at Grass root level for upliftment of women on 27/02/2004.

Meetings

1. Dr. B.M. Nene, Co-principal Investigator of the registry & Mr. M. K. Chauhan Chief Co-ordinator visited International Agency for Research on Cancer, Lyon, France in October 2003.
2. Dr. B.M. Nene, Co-Principal Investigator, Mr. A.M. Budukh and Mr. N.S. Panse attended the XIX Annual Review Meeting of the Cancer Registry during 14-15 Nov-2003 at Chennai.
3. Mr. N. S.Panse, Dr. F. Y. Khan & Mr.T. S. Dudhankar attended pre ARM workshop held at Chennai, 12-13 Nov- 2003.

Visitors

1. Dr. K. A. Dinshaw (Director, TMH, Mumbai) & Principal Investigator (RCR) on 8th November 2003.
2. Dr Gordon Perkin, Senior Scientist, Bill & Melinda Gates Foundation. Dr. J. Sherries, Programme Director (PATH), Seattle, USA and Ms. Anne Boyd, Programme Associate PATH on 2-4 December 2003.
3. Dr. R. Sankarnarayanan - Senior Scientist - Unit of Descriptive Epidemiology, IARC/WHO, Lyon, France on December 2003.
4. Dr. D.M. Parkin, Chief, Unit of Descriptive Epidemiology, IARC/WHO, Lyon, France on 4 March, 2004.
5. Dr. Petcharin Srivatakul, Dy. Director (Know & tecno ..), Dr. S. Chindavijak, Head of Gyn.oncology unit (NCI), Dr. Prasit, Cancer unit of Khonkaen, Dr. Supanee, Cancer unit, Khonkaen. Mrs Sriporn, Onco. Nurse. Unit, Khon Kaen on 11th March 2004.
6. Dr Bhuncha, Director of Burigkan Hospital, Thailand on 11-12 May 2004.

HOSPITAL BASED CANCER REGISTRY

Regional Cancer Centre, Thiruvananthapuram - 695 011

Principal Investigator : Dr. B. Rajan, Director

Officer-in charge : Dr. Aleyamma Mathew

The hospital based cancer registry (HBCR) of the Regional cancer centre (RCC), Thiruvananthapuram has made significant achievements in data abstraction. The data entry is done through a web based software "rccintranet.org" and made available through RCC intranet with provisions for online data retrieval with user restrictions.

The HBCR data is utilized to a large extent by the population based cancer registries located in Thiruvananthapuram and Karunagappally. The registry database has been widely used for a variety of analysis resulting in several scientific publications.

The registry has contributed to the research programmes of the RCC and to attract extramural funding from various agencies for different studies.

The registry has played an active role in conducting cancer awareness classes and detection camps, for the early detection of different types of cancers. During the year 2004, more than twenty cancer awareness classes and around thirty cancer detection camps were conducted in the district of Thiruvananthapuram.

Awards and Degrees

Dr. Aleyamma Mathew, Elected as Member of the **National Academy of Medical Sciences (MNAMS)** in 2003.

Meetings/ Workshops/ Conferences

1. Dr. B. Rajan, India Health study and Rare Cancers in India – Meeting, National Cancer Institute, US, September 2003. Invited lecture: "Gastro-intestinal cancers in India".
2. Dr. B. Rajan, NCRP (ICMR) - WHO attended and chaired sessions in the workshop on patterns of care and survival studies in head and neck cancers, cervix cancer and breast cancer, Bangalore, 23-24 January 2004.
3. Dr. Aleyamma Mathew, India Health study and Rare Cancers in India – Meeting, National Cancer Institute, US, September 2003. Invited lecture: "Oral and pharyngeal cancers in India".

4. Dr. Aleyamma Mathew, Invited lecture, Role of statistics in medical research, University of Kerala, September 2003.
5. Dr. Aleyamma Mathew, Invited lecture, Diet and cancer, Association of Radiation Oncologists of India, Cochi, November 2003.
6. Dr. Aleyamma Mathew attended Annual Conference of Indian Association of Cancer Research, Thiruvananthapuram, 9-12 January 2003. Paper presented "Fat, fiber, fruits and vegetables and the risk of colo-rectal adenoma".
7. Dr. Aleyamma Mathew attended Annual Review Meeting of cancer registries and Workshop of National Cancer Registry Programme organized by the Cancer Institute, Adayar, Chennai, during 11-14 November 2004.
8. Dr. Aleyamma Mathew participated and chaired sessions on group discussion on strategy for short term and long term follow-up in the NCRP (ICMR)- WHO workshop on patterns of care and survival studies in head and neck cancers, cervix cancer and breast cancer, Bangalore, 19-20 January 2004.

Research Projects

1. Case-control study of breast cancer in south Asia comparing urban and rural women, 2002-2004, Funded by: International Agency for research on Cancer, Lyon, France.
2. Project on development of cancer atlas in India, 2002-2004, Collaborators: National Cancer Registry Programme, ICMR, Funding by: World Health Organization.
3. Population-based cancer registry project, Thiruvananthapuram, 2001-2004, Funded by: Finnish Cancer Society, Finland.
4. Project on pattern of care and survival studies, Collaborators: National Cancer Registry Programme, ICMR.
5. End result and survival after cancer treatment (1995 - 2000) – A retrospective analysis
6. Cancer and pre-cancer registration and follow-up of cancer and pre-cancer cases registered in early cancer detection clinic, Palakkad.
7. Reproductive tract infection control programme by Pap smear screening among tribal women of Palakkad district – a pilot study, Funded by Kerala Research Programme for Local Level Development, Thiruvananthapuram.
8. Cancer control programme in Thiruvananthapuram district as part of national cancer control programme, 2003- 2004, Funded by: Ministry of health and family welfare, Government of India.

9. Thiruvananthapuram corporation cancer control programme, Funded by Thiruvananthapuram Municipal Corporation.

Future Project

1. A feasibility study for establishing a dietary and life-style cohort in India (Collaborators: National Cancer Institute, National Institute of Health, US).
2. Pesticide exposure and breast cancer risk among women in Kerala: a case-control study.

Publications

1. Znaor A, Brennan P, Gajalakshmi V, **Mathew A**, Shanta V, Varghese C, Boffetta P. Independent and combined effects of tobacco smoking, chewing, and alcohol drinking on the risk of oral, pharyngeal and esophageal cancers in Indian men. *Int J Cancer*. 2003;105, 681-686.
2. Pandey M, Chandramohan K, Thomas G, **Mathew A**, Sebastian P, Somanathan T, Abraham EK, Rajan B, Nair MK. Soft tissue sarcoma of the head and neck region in adults. *Int J of Oral Maxillofacila Surgery* 2003; 32: 43-48.
3. Bindu L, Balaram P, **Mathew A**, Remani P, Bhattathiri VN, Nair MK. Radiation-induced changes in oral carcinoma cells – a multiparametric evaluation. *Cytopathology* 2003, 14: 287-293.
4. Kuriakose R, **Mathew A**, Koshy RC. Screening tests for predicting difficult endotracheal intubation – a clinical assessment in facio-oro-maxillary and neck malignancy patients. *Journal of Anaesthesiology Clinical Pharmacology* 2003, 19: 37-44.
5. **Mathew A**, Murthy NS and Sharma JB. Design of randomized clinical trials. *Obs & Gynaec. Today*, 2003; 8: 131-138.
6. Pandey M, Thomas S, **Mathew A**, Sebastian P, Nair MK. Malignant tumors of the minor salivary gland: a survival analysis of 17 years from a tertiary referral cancer centre, *J Oral Maxillofacial Surg*, 2003; 49 (1): 25-8.
7. Gajalakshmi V, Hung RJ, **Mathew A**, Varghese C, Brennan P, Boffetta P. Tobacco smoking, chewing and alcohol drinking and lung cancer risk among men in southern India. *Int J Cancer*, 2003; 107 (3):441-7.
8. Pandey M, Latha PT, **Mathew A**, Ramdas K, Chaturvedi SK, Iype EM, Nair MK. Concerns and coping strategies in patients with oral Cancer: A pilot study. *Ind J Surg*, 2003; 65 (6), 496-499.

9. **Mathew A** (editor). Handbook on basic information for cancer registry documentation published by the RCC, Thiruvananthapuram, 2003 and contributed the following 6 chapters in the handbook.
- i. Cancer registration –with emphasis on Indian scenario
 - ii. Classification and coding of neoplasms
 - iii. Statistical methods for cancer registries
 - iv. Follow-up and surveillance
 - v. Cancer registries and national cancer control programme
 - vi. Cancer registries and cancer pattern in Kerala
10. **Mathew A**, Peters U, Chatterjee N, Rothman N, Sinha R. Fat, fiber, fruits, vegetables and risk of colorectal adenomas. *Int J Cancer* 2004; 108 (2): 287-92.
11. Murthy NS, **Mathew A**. Cancer epidemiology, prevention and control –Indian scenario, *Current Science* 2003, 86 (4) 518-527.
12. Pandey M, Abraham EK, **Rajan B**. Chandramohan K. Tuberculosis and Metastatic carcinoma co-existence in axillary lymphnode: A case report. *World J Surg Oncol* 2003, 32:43-48.
13. Kesari AL, Chandrasekhar DS, **Rajan B.**, Mathew BS and Pillai MR. Clinicopathological significance of tissue homeostasis in Indian breast cancer. *Breast Cancer* 2003, 10:241-248.
14. **Mathew A**, Sinha R, Burt R, Caan B, Paskett E, Iber F, Kikendall W, Lance P, Shike M, Weissfeld J, Schatzkin A, Lanza E and the Polyp Prevention Study Group. Meat intake and the recurrence of colorectal adenomas, *Eur J Canc Prev*, 2004, 13, 3, 159-164.
15. **Mathew A, Rajan B**, Pandey M. Do younger women with non-metastatic and non-inflammatory breast carcinoma have poor prognosis? *World J Surg Oncol* 2004, 2:2, 1-7.
16. Iype EM, Pandey M, **Mathew A**, Thomas G, Nair MK. Squamous cell cancer of the buccal mucosa in young adults. *Br J Oral Maxillofac Surg*. 2004, 42:185-9.

POPULATION BASED CANCER REGISTRY, KOLKATA

Chittaranjan National Cancer Institute, Kolkata

<i>Principal Investigator</i>	<i>Dr. Sukta Das, Asst. Director</i>
<i>Co Investigator</i>	<i>Dr. S.S. Mandal, Statistician</i> <i>Dr. M.N. Bandopadhyay, Oncologist, CCWH</i>
<i>Senior Investigator</i>	<i>Dr. Soma Roy Chowdhury</i>

The population based cancer registry (PBCR), Kolkata is functioning in the department of epidemiology & biostatistics, Chittaranjan National Cancer Institute (CNCI) from 1st January 1997, in collaboration with Dr. Saroj Gupta, Cancer Centre Welfare Home, Thakurpukur. The registry was set up under the leadership of Lt. Dr. Urmi Sen, CNCI. After her sad demise, Dr. S. Das has taken over the charge. This is the first population based cancer registry in the Eastern India. It covers an area of 300 sq. km. with a population of about 6.3 million. Presently, information about incident cancer cases are collected from about 50 centres annually. These include government hospitals and private institutions. The cancer mortality data is collected from the Vital Statistical Division of Kolkata Municipal Corporation (KMC). The total number comes to about 6000 cases approximately. Percentages of male and female cancer patients are 52% and 48% respectively. The three most common cancers among males are cancers of lung, oral cavity and larynx and that of females are cancers of breast, cervix, and gallbladder (Table 1). The trend is same for the last five years. Percentage of lung cancer among males is the highest in PBCR, Kolkata in comparison with other urban registries. Initially cancer of cervix was the leading site among females. However the breast cancer has dominated since 1998. Higher incidence of gall bladder cancer among females is noteworthy.

Table 1: Common Cancers

Male		Female	
Site	%	Site	%
Lung	18.0	Breast	23.1
Oral cavity	9.5	Cervix	20.0
Larynx	8.1	Gall bladder	9.2

Ongoing Studies

1. Case-control studies of environmental risk factors in lung, larynx & hypopharyngeal cancer (Collaborators: Unit of Environmental Epidemiology, IARC, Lyon)
2. Case-control studies of breast cancer in women South Asia (Collaborators: Unit of Environmental Epidemiology, IARC, Lyon)
3. Development of Cancer Atlas in India (Collaborators: NCRP, ICMR & WHO)

Training organized

The Department conducted a training programme on 'The Verbal Autopsy – A method to find the cause of death.' for the RGI field surveyors (In collaboration with the Census Office, West Bengal & Centre for Global Health, Toronto) from 21-30 April 2003.

Meetings

Dr. S. Roy Chowdhury & Dr. M.N. Bandopadhyaya participated in the XIX Annual Review Meeting and the Pre ARM Workshop on Cancer Registry of ICMR on 14-18 November 2003, Chennai.

Degree Awarded

Dr.S. Mandal has been awarded the degree in Master of Population Studies (jointly sponsored by the United Nations & the Govt. of India) from the International Institute for the Populations Sciences, Mumbai, India, 2003.

Invitations

Dr.S. Mandal has been invited by the Dept. of Mathematics & Computer Science, Eastern Illinois University, USA, to work on the project entitled "Statistical validation of the epidemiologic modeling for the survival of patients with breast cancer" under a grant from NASA-Ames.

Publications

1. Chunder N., Mandal S., Basu D., Roy A, Roychowdhury S., Panda C.(2003): Deletion mapping of chromosome 1 in early onset and late onset breast tumours- a comparative study in eastern India. Pathology Res. Prac.Vol.199, 313-321.
2. Bhattacharyya N., Chunder N., Basu D., Mandal S., Majumdar J., Roychowdhury S, Panda C. (2004): Three discrete areas within the chromosomal 8p 21.3-23 region associated with the development of breast carcinoma of Indian patients. Exp & Molecular pathology (in press).
3. Chunder N., Mandal S., Roy A., Roychowdhury S., Panda C. (2004): Analysis of different deleted regions in chromosome 11 and their interrelations in early and late onset of breast tumours. Diagnostic Mol. Pathology (in press).

POPULATION BASED CANCER REGISTRY, AHMEDABAD

The Gujarat Cancer & Research Institute

(M.P. Shah Cancer Hospital), Ahmedabad

Principal Investigator: Dr. Pankaj M Shah

Ahmedabad cancer registry has received ICMR sponsored project, "Rural Cancer Registry – Ahmedabad District". This registry started from 1st January 2004. After the appointment of the project staff, intensive training was given to them. One important meeting was arranged with State Govt. health department. Regional deputy director (Health and Family Welfare), chief district health officer, superintendents and medical officers of PHCs and CHCs were present during the meeting. Agenda of the meeting was to stress upon the importance and working pattern of the cancer registry along with the need of their co-operation for data collection.

The institute has a community oncology centre. This center is also a source of registry. It is mainly concerned with health check-up aimed for cancer detection. For the terminally ill cancer patients there is arrangement of hospice complex, in which patients can stay with their relatives. This center is also working as a cancer education center. A well planned cancer related exhibition is also present at the center. School and college students, non-governmental organization and other visitors are allowed to visit this exhibition with prior permission.

Registry staff is also involved in various cancer awareness activities which are organized by our institute. In the year 2003-2004, our registry had participated in celebrating various days.

1. Anti tobacco day: 31st May 2003

Slogan for this year was "Tobacco free film, tobacco free fashion, action!". To create awareness about tobacco related health hazards and environmental pollution, a massive rally comprising over 60 organizations came together on this day. The rally was planned by Gujarat Cancer & Research Institute in association with the Gujarat Cancer Society, doordarshan and a number of non-governmental organisation. It was aimed at forming a strong anti tobacco lobby.

2. Raksha bandhan day: 22nd August 2003

As per our tradition, Rakhis with messages of cancer awareness and tobacco de-addiction were distributed in various departments and public organizations.

3. Kite flying day

This day was celebrated on 11th January 2004 on the roof of Gujarat Cancer & Research Institute. Cured cancer patients and young children were invited. This year a magician was also invited for the entertainment of the children. Special kites were prepared having messages of tobacco related hazard and cancer awareness.

4. Cancer victory day: 14th february-2004

Cancer victory day is celebrated all over the world to mark the message "Cancer is curable". Thousands of cured patients are usually participating in this function to create awareness in the society about cancer myths. This year about 300 cured cancer patients had celebrated cancer victory programme with display of banners, pamphlets and slogan. Ahmedabad traffic police band and other non-governmental organisations actively participated in this programme. It was a thrilling experience to see and listen to the persons who had conquered this deadly disease.

5. Tobacco Holi

This event was organized on the day before Holi (6th March 2004) at the institute. A model man made up of plaster cast was displayed; Gutkha, tobacco wrappers, bidies and cigarettes were hanged all over the model. All the above, materials which had been collected by security guards from the patients and patient's relatives were dumped around it. All of it was then burnt by the tobacco related cancer patients.

Meetings

Dr. S.M. Patel, Professor of pathology and Mr. Jayesh B. Solanki, statistical assistant attended the Annual review meeting of cancer registries, National Cancer Registry Programme organized by the Cancer Research Institute, Adayar, Chennai during 11th-14th November 2004. Dr. S.M. Patel presented the methodology of the working of registry and the 1998 report of Ahmedabad Urban PBCR.



Anti Tobacco Day 31/05/03



Raksha Bandhan Day 22/08/03



Kite Flying Day 11/01/04



Cancer Victory Day 14/02/04



Tobacco Holi 06/03/04

POPULATION BASED CANCER REGISTRY, SIKKIM

S.T.N.M. Hospital, Gangtok – 737 101

Principal Investigator

Dr. Yogesh Verma

The population based cancer registry (PBCR) of Sikkim is one of the 6 PBCR's under the north eastern cancer registries. The PBCR, Sikkim started functioning from 1st July 2003. It covers the entire state of Sikkim with an area of 7042 sq.km. and population of 5.42 lakhs (2001 census) comprising four districts.

Workshops/ Meetings

1. Dr. Yogesh Verma, Principal Investigator participated in the IARC International course on Cancer Epidemiology – Principles and methods, held at Thiruvananthapuram from 1-12 September 2003.
2. Dr. Yogesh Verma, Principal Investigator and the Research officer attended Annual Review Meeting of Cancer Registries and Workshop of the National Cancer Registry Programme organized by the Cancer Research Institute, Adayar, Chennai during 11-14 November 2004.
3. The staff of PBCR, Sikkim participated in the cervical cancer and HPV detection camp on 23rd March 2004 held at STNM Hospital, Gangtok, in collaboration with Biochemistry unit of Indian Statistical Institute ISI, Kolkata.

POPULATION BASED CANCER REGISTRY, GUWAHATI

Dr. B. Borooah Cancer Institute, Guwahati

Principal Investigator

Dr. Jagannath D Sarma

PBCR-Guwahati is one of the 6 PBCRs under north eastern cancer registry. It is situated in Dr. B. Borooah Cancer Institute (BBCI), Guwahati which is a center for comprehensive cancer treatment for the whole north east (NE) region. The establishment of this project is considered as a sequel of another project under (WHO sponsored) NCRP -ICMR "Development of an atlas of cancer in India" of which the department of Pathology of Dr. B. Borooah Cancer Institute, has been one of the collaborating units and the suggestion of a PBCR in Guwahati and subsequent proposal was presented by the pathologist (Dr. J.D. Sharma) of BBCI under the guidance of officer-in-charge of NCRP-ICMR at Bangalore on 31.7.02 in the national workshop of the project "Development of an atlas of cancer in India".

Guwahati, the state capital of Assam has been called a gateway to the N.E. region; having links with the entire N.E. region and the rest of India by all routes of travel and communication. BBCI, a regional cancer center, caters to the needs of cancer patients of the N.E. and adjoining parts of Bengal and Bihar. It is a referral hospital for all major hospitals of Guwahati city, Assam and N.E. (private and government).

PBCR, Guwahati, covers the whole of Kamrup-urban with a population of 900,518 of which 490,772 are males and 409,746 are females according to the 2001 census report. Kamrup district covers an area of 4345 sq. km. It is situated in 26.11 north latitude and 96.46 east longitude approximately 200 meter (656 feet) above sea level (ref: New Horizon in geography - Great World Atlas, Publisher McMillan, London).

The registry started functioning from July 2003. The process of data collection and completing core proformas have started from July 2003 as per ICMR (NCRP) guidelines.

PBCR, Guwahati is still in its formative stage and is struggling against the various odds. However it is with experiences, that new PBCR will be able to show incidence and pattern of cancer in this part of the country and hopeful of engaging further in selected epidemiological research through PBCR -Guwahati.

Workshops/ Meetings

1. Dr. Jagannath Dev Sharma, Principal investigator participated the IARC international course on cancer epidemiology – principles and methods, held at Thiruvananthapuram from 1-12 September 2003.
2. Dr. Jagannath Dev Sharma, Dr. Oli Goswami, medical research officer and Miss Ruma Bhattacharjee, statistician attended annual review meeting of cancer registries and workshop of the national cancer registry programme organized by the cancer research institute, Adayar, Chennai during 11-14 November 2004. Dr. J D Sharma presented a paper on the inception, methodology and various problems of the newly established PBCR at Dr. B. Borooah Cancer Institute, Guwahati in the workshop.

