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CRAB – Vol. 21 No.1, October 2016

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The Cancer Registry Abstract – CRAB was initiated in 1984 and now it is appearing as an annual presentation highlighting the registry operations conducted by several staff working in different terrains, seeking co-operation from various centres – Hospitals, Clinicians, Labs, Governmental Offices Vital Statistics Department(VSD). The NCRP registries collect information from people with varied life style practices who adhere to their native, tribal and religious norms. In CRAB issues, these are expressed along with peculiarities in cancer occurrence by registry workers. Registry reports adhere to National & International Stipulations & Standards.

The editors wish to thank all the contributors from various registries. Such co-operation indirectly expresses the acceptance of the programme, their support & hearty contributions to the NCRP programme.

In the IACR meeting 2015, there were 160 presentations (Oral + Poster) of which 59 were by NCRP registry staff.

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Dr Soumya Swaminathan, MD,
D.G., ICMR, Secretary,
Department of Health Research

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Secretary to the Government of India
Department of Health Research
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Director-General, ICMR

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Message

Cancer registration under ICMR's NCDIR- National Cancer Registry Programme in India has completed more than three decades, and has worked tirelessly towards a cause which has several long term benefits and is a forerunner of a major public health programme in the country. It has evolved into a vibrant network covering many geographical areas of the country, and has included a wide spectrum of cancer registration sources. The data generation ability of the cancer registries under the network using modern day technology is creditable. Since the data collection begins from the lowest source of cancer registration – the foundation of this form of registration is indeed strong and would continue for long periods.

It gives me great pleasure to observe that the compilation of the annual newsletter "Cancer Registry Abstract (CRAB)" has also kept pace with these activities and has covered articles/updates/meetings which have taken place on a regular basis. It is well timed with the Annual Review Meeting of NCRP so that helps in recollecting activities and achievements of the past year. It is evident that the registries have made their best efforts towards the newsletter in form of contributing scientific articles, activity updates and relevant photographs. The credit for the contribution goes to the cancer registry workers led by able senior investigators across the country.

I wish that 'CRAB' facilitates the working of NCRP and in strengthening partnerships and scientific excellence. I convey my heartiest congratulations to the network.

Soumya

(Soumya Swaminathan)

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MESSAGE

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Dr. G.K. Rath,
Head, NCI, Professor of
Radiation Oncology & Chief

October 8th, 2016

MESSAGE

It is a matter of great pleasure that XXI Volume of Cancer Registry Abstract (CRAB) is being released on the occasion of the XXXII Annual Review Meeting of National Cancer Registry Programme (NCRP) to be held at Kohima, Nagaland. I hope that this report will give an insight into the various activities of the registries under the NCRP network and the different articles published in this edition will be immensely useful for the clinicians, researchers and administrators who are engaged in the field of cancer research and control.

I extend my warmest greeting to Dr. Eric Zomawia and Mr. P. Gangadharan who worked meticulously to bring out this report. I also take this opportunity to congratulate all those who have contributed to this report.

With Best Wishes,

Prof. G K Rath,
Head, National Cancer Institute (2nd Campus AIIMS, Jhajjar, Haryana) &
Chief, DRBRAIRCH & Professor, Radiation Oncology, AIIMS, New Delhi

MESSAGE

FUTURE INSIGHTS FOR NCRP

Dr Prashant Mathur
Director, NCDIR, Bengaluru

It gives me an immense honour and pleasure to be part of the great network of ICMR's National Cancer Registry Programme (NCRP). As a new incumbent to National Centre for Disease Informatics and Research (NCDIR), Bengaluru, I have reviewed the cancer registry programme and am impressed with the well laid out architecture for handling complex data collection, analysis and reporting.

The zeal and commitment of the registry workers deserves to be appreciated and congratulated. Over the past few months, certain issues came to my mind wherein we as a network can add more value.

1. **Strengthening data collection in terms of its completeness and timeliness.** The strength of the registry comes from data collection, abstraction, transmission, quality checks, analysis and reporting through a well established mechanism from grass root levels. The barriers at local level need to be identified and addressed systematically. Use of modern IT tools and technique shall be an important pillar to achieve it. Confidence building measures amongst our sources of registration, data administrators and partners will be crucial to scale up the activities and programs.

2. **Improving the existing scope of cancer registry.** The National Programme for Prevention and Control of Cancer Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) and other related cancer control activities would like to be better informed in the areas of cancer management, staging, outcomes, pattern of cancers, cancer epidemiology to include key socio-economic-demographic parameters, referral systems of cancer treatment, utilization level of cancer facilities, need for proactive investments for cancer detection and treatment based on scientific rationale and many more. A strategic road map is needed to address the above desirables in terms of human resources, skills, collaboration, financial investments and commitment.

3. **To leverage the information generated**

by NCRP for strengthening research for cancer prevention and control. NCDIR would like to steer this activity in collaboration and partnership of the network and key stakeholders outside NCRP in a true spirit of sharing and ownership. The spectrum of this research could be basic and fundamental, applied as in clinical or public health area, epidemiological, implementation, trials, socio behavioral, program evaluation and policy research.

4. **Setting up of cancer surveillance systems** would be challenging on one hand, yet rewarding enough to motivate us.

I am sure there are many more ideas and concepts with you to share and enrich us. This will enable us to put in place a strategic framework and plan of action so as to guide us for at least the next 10 years. With your support and guidance, NCDIR shall strive to achieve bigger milestones.

Acknowledgements for CRAB.2016 are due for Dr. Eric Zomavia, Mr. P. Gangadharan, Dr.Meesha Chaturvedi, Mrs Priyanka Das,Dr. Debjit Chakraborty, Mr.Satish Kumar, Other staff of NCDIR and contributors. May this hard work propel scientific vigour, partnership and ownership.

MESSAGE

Prof P.P. Bapsy, MD, DM,
Former Professor & IC Director, KMIO
Sr. Consultant-Medical Oncology, Apollo Hospitals

I have the proud privilege to be associated with National Cancer Registry Programme since 1982.

The Cancer Registry is central to any rational program of cancer control. It helps by giving the descriptive of epidemiology of cancer for generating scientific studies. The registry has grown and has become as a National Centre for Disease Informatics and Research. The tremendous work turned out by the NCDIR has had several insights into cancer incidence and pattern of care for breast, cervix and Head & Neck cancer. The pattern of care of the 3 major cancers has given a lot of thinking into the management of these cancers. The type of treatment and the survival outcome has been a major strength from these studies. The three publications from the patterns of care: Cancer Cervix published in Journal of Global Oncology, Cancer Breast published in Journal of Global Oncology and Cancer of H& N accepted for publication in Asia Pacific Journal of Cancer prevention. All these three papers have shown several key points for further improvements in cancer care.

Time trends in Cancer Incidence 1982 – 2010

"Among males cancers of the Tongue, Mouth, Colon, Rectum, Liver, Lung, Prostate, Brain, NHL and Lymphoid Leukemia have shown an increasing trend. Among females, cancers of Gall bladder, Lung, Breast, Corpus Uteri, Ovary, Thyroid, Brain, NHL and Myeloid leukemia have shown a statistically significant increase of AAR"

The decline in incidence of Cervix cancer is seen across all registries including the rural registry at Barshi. This decline is observed in the absence of any organized screening or Early detection programme in the registry areas

Source: Time Trends in Cancer Incidence rates 1982 – 2010; NCRP – ICMR 2014

MESSAGE

Dr (Prof) R.A. Badwe, MS
Director, Tata Memorial Centre, Mumbai

TATA MEMORIAL CENTRE

TATA MEMORIAL HOSPITAL
AND
ADVANCED CENTRE FOR TREATMENT, RESEARCH & EDUCATION IN CANCER
(A Grant-in-aid Institute under the Department of Atomic Energy, Govt. of India)

Dr. (Prof.) R. A. Badwe MS
Director

MESSAGE

October 25, 2016

The National Cancer Registry Programme is the most pivotal step in cancer control in India. Before engaging with an enemy, it is necessary to understand its magnitude and its behaviour. This is best understood through NCRP. Over a period of years there has been increasing percentage in cancer registration. But more importantly representation from rural, semi urban and urban (metropolitan) has been achieved and on the same lines adequate geographic representation from all parts of India would allow proper sampling and projection of this data to the national level would not be too far away from the reality. The data on incidence of cancer has allowed the regulator to understand the magnitude of problem and presence of some unique cancers like gall bladder in North East and along the Ganges or nasopharyngeal cancer in the North East. This has induced health care planners to create appropriate infrastructure and trained human resources to take care of this unique problem. Huge variation across the country in various geographical region has given insights to public health experts into causes for cancer. It is now understood that Tobacco, Infection (HPV & H.pylorie) and Obesity account for more than 2/3rd of the cancer in India. Fortunately these 3 type of cancers lend themselves only to prevention but also to early detection.

A comparative analysis of incidence in India and the developed world has shown that cancer in India is about a third or 1/4th of that in the developed world. A price that the West pays for the urbanization. The trends in cancer incidence offer the changing cancer scenario across the country and rapid reduction in cervical cancer in urban population drives home the importance of hygiene in urban region as a correctable factor. All the registry workers are the champions of wealth of information they offer to clinicians, public health experts as well as health Secretaries in every State. If we were to link this information of incidence coupled with mortality to Adhaar Card, our unique personal identification, it would allow 100% documentation. The reliable estimate of mortality would be a boon for health care planners. It is not only for planning the strategy for cancer control but also to understand the effect of intervention that we require these solid yardstick of incidence and mortality related to cancer. Without this data to tackle cancer would be to embark upon a sea voyage without a compass & map.

Dr R.A. Badwe

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MESSAGE

A Historical Tour down the memory lane

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NCDIR, ICMR

By early 1960s, the Union Government perceived that the increase (both absolute & apparent) in the incidence of cancer. This led to the formation of fact finding committees (The Rao Committee, 1965 and Wahi Committee in 1971). The committees were entrusted to have an in-depth study of the problem and suggest solutions.

As per recommendations of the Committees, the CRTP (Cancer Research and Treatment Programme) was formed in 1975. The function of the CRTP was to gather reliable and systematic data on Cancer statistics in India and to process it meaningfully to improve national policy on Cancer Management.

National Cancer Registry Programme (NCRP) was considered the drafted daughter of CRTP to collect systematic data on cancer epidemiology. Formed under ICMR in 1981, it started functioning from 1st January 1982 with 3 PBCRs [Bombay, Bangalore and Madras] and 3 HBCRs [Chandigarh, Dibrugarh and Trivandrum]

With sustained patronage of ICMR, the NCRP continuously accrued more centres. With significant development of information technology in India, the NCRP initiated National Cancer Atlas Program from the year 2000/ 2001. Large areas of India came under the Atlas network and for the first time, a near-complete cancer map emerged.

On 10th September 2009, a meeting was held at ICMR to initiate Translational Research Activity on Cancer at NCRP coordinating unit at Bengaluru.

The year 2011 was a landmark in the development of National Disease Registry Program. NCDIR was formed with a wider view to include informatics on three major diseases – Cancer, Stroke and Diabetes. Since NCRP had a long history of indigenously developing cancer registration in India, the ICMR very thoughtfully initiated the program at the NCRP. Thus, the NCRP became a part of the NCDIR. The first meeting was held at Nirmal Bhavan, Bengaluru, on 15th September 2011.

Research Area Panel in Cancer (RAP-C) under Division of Cancer of NCDIR: Following the suggestions of the Translational Research Committee, the Cancer Division of NCDIR had formed a Research Area Panel in Cancer (RAP-C). With this, the responsibility of the Cancer Division has gone up. This division now has to (a) Collect data on cancer epidemiology and calculate trends therefrom (function of NCRP), and, (b) Arrange translational research by itself and perhaps also communicate to ICMR as to what should be done

about Cancer Research & Treatment that would benefit the patients and the society directly.

The RAP-C is to scrutinize the aspect of Research of all the registries under NCDIR. Its activity should include encouraging research proposals (preventive/ interventional/ therapeutic) from them for evaluation and subsequently forward the proposals to ICMR for technical and budgetary approval. The proposals could be presented during a special session of the ARMs. Subsequent modification and processing of the proposals could be done within a specified time frame before they are forwarded to ICMR for technical and budgetary clearance. The RAP-C, later, may evolve to a position to evaluate all the cancer related project proposals that come for scrutiny and budgetary approval to the ICMR for their need-based translational values.

A few considerations for activities under RAP-C could be as follows:

- Published literatures on cancer research from India are mostly lab oriented and in their turn, breed more lab-oriented programs and publications. The benefit of these lab researches seldom reaches the bedside. To come out of this vicious cycle, RAP-C of Division of Cancer, NCDIR, should be entrusted to advice, develop and coordinate **translational research** with population study as a solid data base. Collaboration should come from the PBCRs, HBCRs and other competent research institutes.

- The Pattern of Care and Survival Studies (POCSS) initiated by NCRP has produced good results that can serve as a guideline for cancer therapeutics in India. More participating centres should come forward to join this initiative. The ultimate outline will be production of a therapeutic guideline (NCCN – like ICCN) enriched with our own national data. Completeness of follow up is an important issue. The participating centres should indigenously develop techniques to assure near complete follow-up. This itself will be considered a valid research project that could be coordinated by RAP-C with the participating centres, local sociologists, social activists, information technologists and health administration. The issue of **notifiability of cancer** in various states could be coordinated by Cancer Division of NCDIR. This will immensely help follow-up service and help the POCSS. The society will be the ultimate beneficiary.

- Research on Non-Tobacco Related Cancers (**NTRCs**): NCRP data has shown that overall about 33% of all cancers are tobacco related. With serious efforts by the Government to control tobacco, we can hopefully assume that TRCs will gradually go down. On the contrary, the proportion of NTRCs (RF about 66% now) is expected to rise on the face of a decreasing trend of TRCs. Another important fact is that the overall cost of tertiary care in NTRCs is higher than that of TRCs. Thus the cost of Cancer therapeutics shall increase. We have hardly any clue as to what causes the NTRCs and we are not giving adequate care to search for the aetiology and almost no effort towards their control. It is high time that the RAP-C should give more care for preventive and therapeutic research on NTRCs.

- The fields of **Geo- oncology and Environmental Oncology** are relatively barren areas. It is true that whole of India has not come completely under NCRP network. However, the existing PBCRs can now join

hands and collaborate with environmental biologists, geochemists, agricultural scientists, food scientists, veterinary centres etc to find the intricate relationship between environment and certain cancers. Results of such research shall directly benefit the society. A golden example of such a study was executed in the global esophageal cancer belt. A collaborative work with BARC (Bhabha Atomic Research Centre) at Thorium rich sandy areas of Kollam District has produced some good results. Proposed Gall Bladder cancer study along the Gangetic belt is another such example. The number and extent of studies need to be increased.

- A number of **professional oncological bodies** (Gynecological Cancer, Urological Cancer, Breast Cancer groups etc) operate independently. Various centres and authors report various types of observational and interventional studies in their respective proceedings of annual conferences. However, they are seldom communicated in accredited journals. This is mostly because of fault in experimental design or inadequacy of data base. Various Institutes and consultants may form a network among themselves for organ specific cancers. The RAP-C of NCDIR may act as a coordinating unit between these initiatives. For this, the RAP-C of NCDIR and for that matter NCDIR itself should be more publicised among different faculties. The RAP-C should form a support group that will maintain regular rapport with these professional bodies.

RAP-C and Registry Activity in Cancer

- Historically, as one can see, the CRTP envisaged NCRP primarily as an agency to collect systematic data on Cancer Epidemiology. The NCRP continued to function as data gathering machinery, and, at the same time developed its own human resources as it grew. The **human resource** was developed by continuous training. The trained personnel who work selflessly in different PBCRs and HBCRs spread over the whole of the nation are invaluable to the endeavour of the NCRP. The flexible teaching and **training modules** were developed by trial and errors by NCRP itself. Formation of RAP-C is need-based. It is formed to meet the challenge of developing transitional research out of registry data. The Registry program shall continue to be its mother. Success of RAP-C will, therefore, be dependent on health of the Registry Program. Essential steps that need be taken include **coverage of uncovered areas (perhaps in Cancer Atlas mode)** and more frequent and regional training programs for the workers of PBCRs and HBCRs.

- **Cancer Control Program** is mediated directly through Department of Health & Family Welfare. It will be more rational if areas and funds are considered after the Cancer Registry under NCDIR is consulted. This will not only help need based fund utilisation but also pave the way for translational research to fulfil national interest.

Epilogue: The activity of RAP-C should remain flexible. The data yielded by the Registry Programme should be a major guideline. Let us hope that the RAP-C endeavour will one day be recognized as a mile-stone in the history of medical research in India.

MESSAGE

Dr Amal Chandra Kataki,
Director,
Dr Bhubaneswar Borooah Cancer Institute, Guwahati

Cancer registries under the network of National Cancer Registry Programme-Indian Council of Medical Research are an integral component of the National Cancer Control Programme of India. Cancer remains one of the major causes of non-communicable diseases in the country with high morbidity and mortality. It is estimated that around 12 lakh new cancer cases are diagnosed each year in India. With the burgeoning of population, increase in the life expectancy, changes in life style and habits, the burden of cancer is expected to rise in our population. Reducing the cancer burden involves oncologists, researchers, epidemiologists, public health planners, and policy makers. Cancer registries play a key role in determining the shape of a rationale cancer control programme.

It has been established by epidemiological studies that almost a third of all cancers can be prevented by life style and dietary modifications. In this regard, the role of cancer registries is crucial to determine the pattern and magnitude of different cancers in a population. The data obtained from different population-based cancer registries points towards environmental risk factors or lifestyle risk behaviours in a given population, so that preventive measures can be taken to reduce the number of cancer cases and deaths resulting from these cancers. National Cancer Registry Programme (NCRP) under the Indian Council of Medical Research was started in 1981 with the establishment of 3 Population-Based Cancer Registries (PBCR) and 3 Hospital-Based Cancer Registries (HBCR). At present, there are 29 PBCRs and that many HBCRs in India. The growth of National Cancer Registry Programme of India is a success story of its own. And, in the future, NCRP should envisage representing more population of the country in its cancer registry map. The true importance of cancer registries lies when they collect accurate and complete cancer data, which can be used for cancer control and epidemiological research, public health program planning, and finally for improving patient care.

Patterns of Care and Survival Studies (POCSS) provide important information on

cancer treatments as documented from the hospital records. The ongoing nationwide multi-centric POCSS on common cancers like oral cancer, breast and uterine cervix is important to develop national guidelines for their treatment, with optimum utilization of resources. The goals of POCSS should be to evaluate the evidences, disseminate the findings in journals and through professional meetings, and finally improve the quality of care in clinical practice based on the evidences obtained. It must be mentioned that despite the limitations and difficulties of active patient follow-up in India, the staff of POCSS across the network of NCRP are doing a commendable job as far as generating information on overall survival is concerned.

The mandate of National Cancer Control Programme of India should be fulfilled, and concerted efforts must be made by all the stakeholders in delivery of quality cancer care across its continuum, from preventive measures to treatment and palliative care.

(Dr. Amal Ch. Kataki)

Projected Number of Cases in India for selected Sites

Males

	2013	2020
All Cancers	522184	622203
Lung	52685	64615
Liver	18224	23954
Gall Bladder	10730	14176
Colon	15966	21489

Females

	2013	2020
All Cancers	564619	698725
Lung	21234	33511
Liver	8514	11049
Gall Bladder	20388	29712
Colon	12917	19113
Cervix	92731	100479
Breast	94208	119782
Thyroid	16389	22808

Source: Time Trends in Cancer Incidence rates 1982 – 2010; NCRP – ICMR 2014

EDITORIAL

Dr Eric Zomawia
State Nodal Officer (NCD)
& Principal Investigator, PBCR, Mizoram

It is a great pleasure and an extreme honour to be associated with this year's edition of CRAB in this XXXII Annual Review Meeting of Cancer Registries at Kohima, Nagaland. On behalf of the editorial team I thank all the contributors. The credit for publication of this edition of CRAB goes to Mr. P. Gangadharan and the editorial team.

It has been amazing 15 years since I was inducted into the family of NCRP. I still remember the time when I attended a Regional Workshop on 'Development of an Atlas of Cancer in India' at Guwahati, at the invitation of Dr Nandakumar. That was in 2002, and I had to travel by road through an extremely muddy road at Cachar district where roads were under major repair and hundreds of vehicles were stranded. Somehow I made it to the meeting and thus my journey from pathology to cancer epidemiology started that day and so did many of my colleagues from the northeast.

NCRP, which started with 3 PBCRs and 3 HBCRs in 1982, saw the expansion of PBCRs to 14 in 2003 with the simultaneous commencement of 6 PBCRs of the northeast region covering 4 states of Assam, Mizoram, Manipur and Sikkim. It is heartening to note that presently under NCRP-NCDIR, there are 29 PBCRs and 29 HBCRs, and that most of the states are now covered. This is indeed a great achievement. 32 NCRP Reports have been published till date and it has brought out many findings – high incidence of stomach and lung cancers in Mizoram, esophagus in Meghalaya and Kamrup Urban area, nasopharynx in Nagaland, tongue in Bhopal and Ahmedabad, gall-bladder in the Gangetic belt, and so on. Not only that Cancer Registries have formed the backbone for cancer research, cancer patient care and cancer control measures in the country.

The various heads of NCRP and ICMR and all the members of Scientific Advisory Committee truly deserve to be acknowledged for the evolution of NCRP. One man in particular needs to be mentioned – Dr A. Nandakumar, who has recently retired as Director in charge of NCRP-NCDIR, Bangalore. His insight, vision, untiring efforts and enthusiasm has been the main force behind the expansion of NCRP network into the northeastern region and to many other areas of the country, during the last 15 years or so. He may have officially retired but he will always continue to be our source of inspiration. His immense contributions are gratefully acknowledged.

The editorial team also takes this opportunity to warmly welcome the new Director of NCRP-NCDIR, Dr Prashant Mathur. He has kindly shared his 'Future Insights for NCRP' in this edition, and from his insights we are positive that NCRP will continue to scale new heights and achieve bigger milestones.

REPORT TO THE NATION ON THE STATUS OF CANCER IN INDIA AS OF MAY 2016

Based on the consolidated cancer registry reports by Indian Council of Medical Research through its National Cancer Registry Programme

Dr A. Nandakumar,
Advisor / Consultant, NCDIR

The National Cancer Registry Programme has generated reliable data on magnitude and patterns of cancer from different regions of the country. The systematic collection of cancer data as per international norms has been continuing since 1982.The present release is of consolidated data of 2012-14 from various Population Based (PBCR) and Hospital Based Cancer Registries (HBCR) in form of reports.

The periodic publication of these reports has achieved the objective of dissemination of evidence based information on cancer in India and the World. Most of the scientific data contribution in the area of cancer in India and for India as part of the world has emerged using National Cancer Registry Programme data as baseline. Besides being a source of authentic information for media, the reports have been cited by researchers /clinicians/Public Health Bodies/administrators on several occasions. Since scientific research is an ongoing process, the number of such citations is ever increasing. As of May 2016 the citations of these NCRP reports alone have exceeded 1000 besides 543 publications with around 14,000 citations.

Patterns of Cancer: The highest age adjusted incidence rate (AAR) (270.7/100,000) of cancer of all anatomical sites among males is seen in Aizawl district in Mizoram State and among females in Papumpare district (AAR=249.0) of Arunachal Pradesh state.

Among males, cancer of the mouth is the leading site in registry areas of western states of the country (Barshi Rural/expanded, Ahmedabad Urban, Nagpur, Pune and Wardha). Cancer of mouth is also the leading site in the registry of Bhopal, and the second leading site in Mumbai and Aurangabad. Among females East Khasi Hills in Meghalya state had the highest AAR (9.1) for cancer of the mouth. Lung cancer is the leading site of cancer in 10 of 27 PBCRs and the second or third leading site in another 9 PBCRs. All the metros of Delhi, Mumbai, Kolkata, Bengaluru and Chennai have this cancer as the leading site in males.

Among females, cancer of the breast is the leading site in 19 of 27 PBCRs and the

second or third leading site in the remaining 8 PBCRs. Cancer of the cervix is the leading site of cancer in the rural areas in Barshi district of Maharashtra state, and in the states of Mizoram, Tripura and Nagaland. It is the second leading site in 16 PBCRs.

Projection of Burden of cancer: To plan and prioritize Health care services (both diagnostic and treatment) in India, cancer projections are important and useful. The estimated total burden (for the country as a whole) of cancer for the year 2016 is around 14.5 lakh new cases during 2016 and 17.3 lakh new cases in2020. Cancer of the breast with estimated 1.5 lakh (over 10% of all cancers; 1.45 in females and 0.05 in males) new cases during 2016 is the number one cancer in both males and females put together. Cancer of the lung is next with estimated 1.14 lakh (83,000 in males and 31,000 in females) new cases during 2016 and 1.4 lakhs in 2020. Cancer of the cervix is the third most common cancer with estimated 1.0 lakh new cases in 2016 and about 1.04 lakhs during 2020. Cancers of sites associated with use of tobacco account for about 30% of all sites of cancer in males and females.

Trends in incidence rates of cancer: For all sites of cancer there was a significant increase (Annual Percentage Change (APC)) in males in the PBCRs at Bangalore, Chennai and Delhi and in females at Bangalore, Barshi and Bhopal. Among males, there was a significant increase in the incidence rates of cancers of the colon, rectum and prostate in the PBCRs at Bengaluru, Chennai and Delhi. Among females, there was a significant increase in the incidence rates of cancers of the breast, corpus uteri, ovary and lung. All the PBCRs at Bengaluru, Barshi, Bhopal, Chennai, Delhi and Mumbai showed a significant decrease in the incidence rate of cervical cancer.

Tobacco Related cancers: Among males, more than 50% of the cancers were in organ sites associated with the use of tobacco in the cancer centers at Regional Cancer Centre, Nagpur (60%), Cachar Cancer Hospital, Cachar (57.3%), B.B. Borooah Cancer Hospital, Guwahati (56.0%), Malabar Cancer Centre, Kannur (53.3%) and Assam Medical College, Dibrugarh (53.2%). In the PBCRs the proportion ranged from 65.2% in Megahalaya to 24.4% in Naharlagun. Among females, 7 of 17 cancer centres with HBCRs had over 20% of cancers associated with use of tobacco. In the PBCRs this ranged from 42.3% in Meghalaya state to 6.9% in the districts of Arunachal Pradesh covered by Pasighat PBCR.

Clinical Extent of Disease: Most of the patients generally present themselves to the hospital for diagnosis and treatment when the disease has spread regionally or in an advanced stage. The overall proportion of patients who come when the disease is at an early – localized stage is 12.5%.

PRESENTATION OF REPORTS ICMR MEETING MAY 2016

FAREWELL TO Dr. A. NANDAKUMAR

THE NATIONAL CANCER REGISTRY PROGRAMME (1980–2016)

Mr P. Gangadharan
Member SAC Committee & HOD, Cancer Registry
Amrita Institute of Medical Sciences

The concern regarding the increase of cancer patients led our health planners and scientists to work on cancer prevention and its control. For this, it was essential to understand the burden, pattern and trends of the disease. It was after several meetings and discussions during 1980s that the ICMR initiated the National Cancer Registry Project which soon became the National Cancer Registry Programme. Dr. P N Wahi, Dr. U K Luthra led the proceedings initially strongly supported by Dr. Ramalingaswami the then DG, ICMR.

Organising and functioning of the registries were standardised as per International systems during the initial years itself when there were only three HBCRs and three PBCRs. The three PBCRs were in Mumbai, Bangalore and Chennai and HBCRs were initiated in PGI, Chandigarh, Medical College Hospital, Dibrugarh and Regional Cancer Centre, Trivandrum.

The head quarters of NCRP was located in ICMR office, New Delhi and directed by Dr. Luthra. The functional aspects were guided and monitored by Dr. L D Sanghvi, Cancer Research Centre, TMC Mumbai. Later Dr. Sarala Krishnamoorthy guided the programme for a few years. Dr. D K Jain managed all the functional aspects from 1982.

The entire administrative and technical work of the NCRP programme was shifted to Kidwai Memorial Institute of Oncology in 1991 with Dr. A. Nandakumar as chief and later in 1999 the office was shifted to another premise and in 2010 the NCRP established its office in Nirmal Bhavan – ICMR office located near the air port. The NCRP performance and outcome led the ICMR to initiate the National Centre for Disease Informatics and Research (NCDIR) in 2011. Currently, the NCDIR has developed community level studies of three more NCDs stroke, Diabetes and CVD.

During the formative years the NCRP under Dr. Nandakumar had three PBCRs and three HBCRs only. As the result of dedicated and hard work undertaken during the last 34 years, there are now 29 PBCRs, 29 HBCRs and 17 centres collaborating with Patterns of Care and Survival Studies.

The transformation from six registries to almost 60 registry centres has taken place during the last 34 years. The beginning of this major transformation was due to the commissioning, progress and execution of the project Atlas of Cancer in India initiated in 2008. This project was designed to collect information from laboratories and medical

centres and such minimal data was studied and analysed from 320 centres spread across the country with very significant outcome as well as the demonstration of cancer occurrence and pattern in the country.

In the Atlas project, Dr. Nandakumar and his team visited many centres during a period of one year discussing with them the need and purpose of the programme which resulted in wholehearted co-operation from several centres. Further, an important landmark of the study was the operational facility created by e-mail transfer of information from the centres directly to NCRP Bangalore. This was the first time such an effort was undertaken in our country for medical data collection and transfer from different centres to NCRP. This system is also used now by many centres. This in-house developed system contributed to a high quality processing capability also.

The outcome of this programme apart from the innovative data transfer methodology executed but also more importantly the observation that some of the north east centres have a very high cancer patient load. This opened up an opportunity for further studies directed to measure the cancer burden so as to initiate cancer control in the area. Further to these, it was also observed that the occurrence of certain cancers is not uniform in the total registry network. Certain cancers predominantly were seen in some areas which thus identified areas for epidemiological and etiological studies. Several PBCRs were started based on the findings of Atlas project.

The Cancer Atlas project outcome was not only used for organizing newer registries but the most important outcome was that even for the National Cancer Registry Programme the information collection and transfer by such e-transfer was made possible. This has helped the linking of registry information to NCDIR head quarters with minimal delay. Along with these the completeness and correctness of information, consistency, data uniformity checking also could be done by the in-house developed computer application. Such innovative work was undertaken by the NCRP team led by Dr. Nandakumar.

In the most recently published NCRP-HBCR report 2012-2014 a total of 1,27,885 cases from HBCRs, 49,132 cases from HBCR DM users and 1,74,693 cases from PBCRs were reported and presented to the nation. This brings to a total of 3,51,700 cases and their analysis were reported in two reports together.

Besides the above, Dr. Nandakumar initiated in 2009 the special study of Patterns of Care and Survival Studies on cancers of Breast, Cervix and Head and neck. This was the first study undertaken in our country involving several centres, their expertise and experience in the treatment of these cancers. The NCDIR has also analysed the outcome which can guide for achieving optimal treatment outcome. Dr. Nandakumar has initiated such innovative studies executed with a lot of originality and passion.

STAFF NCDIR – 2016

CRAB 2016 EDITOR & CO-EDITORS

Dr. Eric Zomawia

Mr. P. Gangadharan

Dr. Meesha Chaturvedi

Ms. Priyanka Das

CANCER REGISTRIES IN INDIA BY NCRP

Population Based Cancer Registries

(Number of Reporting Years given in Brackets)

Registry	Total cases	
Bangalore	8371	(1)
Barshi Rural	929	(3)
Barshi Expanded	2032	(1)
Bhopal	3464	(2)
Chennai	11659	(2)
Delhi	19746	(1)
Mumbai	13357	(1)
Cachar District	4766	(3)
Dibrugarh District	2843	(3)
Kamrup Urban District	5463	(3)
Manipur State	4623	(3)
Mizoram State	4656	(3)
Sikkim State	1385	(3)
Ahmedabad Urban	9594	(2)

Registry	Total cases	
Aurangabad	2241	(3)
Kolkata	5373	(1)
Kollam	11012	(3)
Nagpur	4653	(2)
Pune	7103	(2)
Thiruvananthapuram	15640	(3)
Meghalaya	4248	(3)
Tripura State	6330	(3)
Nagaland	1361	(3)
Wardha	2730	(3)
Naharlagun	1439	(3)
Pasighat	334	(3)
Patiala	6011	(3)

Source: PBCR report 2012-2014, NCRP March 2016

Hospital Based Cancer Registries

Registry	Total cases	
Tata Memorial Hospital, Mumbai	25541	(1)
Kidwai Memorial Institute of Oncology, Bangalore	8687	(1)
Cancer Institute (WIA), Chennai	8554	(1)
Regional Cancer Centre, Thiruvananthapuram	23206	(2)
Assam Medical College & Hospital, Dibrugarh	3587	(3)
Dr B. Borooah Cancer Institute, Guwahati	22562	(3)
Post Graduate Institute of Medical Education & Research, Chandigarh	17182	(3)
Dr. B R Ambedkar Institute Rotary Cancer Hospital, AIIMS, New Delhi	8039	(1)

Centres Using HBCR DM (NCRP)

Registry	Total cases	
Amrita Institute of Medical Sciences & Research Centre, Kochi	10647	(3)
Sher-I-Kashmir Institute of Medical Sciences, Srinagar	9144	(3)
Malabar Cancer Centre, Kannur	7444	(3)
Cachar Cancer Hospital, Silchar	4831	(3)
Vydehi Institute of Medical Sciences, Bangalore	4054	(3)
Regional Cancer Centre, Raipur	3053	(3)
International Cancer Centre, Neyyoor	1341	(3)
RST Regional Cancer Hospital Nagpur	5056	(2)
Caritas Cancer Institute - Caritas Hospital, Kottayam	3462	(2)

Source: Consolidated report of HBCRs 2012-2014, NCRP, March 2016

HBCR – ongoing in RCCs

Tata Memorial Hospital, Mumbai
Regional Cancer Centre, Thiruvananthapuram
Cancer Institute (WIA), Chennai
Kidwai Memorial Inst of Oncology, Bangalore
Postgraduate Institute of Medical Education and Research, Chandigarh
Dr. B. Borooah Cancer Institute, Guwahati
Government Medical College,Jammu
Dr. B.R. Ambedkar Institute Rotary Cancer Hospital, New Delhi
Mizoram State Cancer Institute, Aizawl
RST Regional Cancer Hospital, Cancer Relief Society, Nagpur
Regional Cancer Centre, Agartala
Regional Cancer Centre, Raipur
Sher-I-Kashmir Institute of Medical Sciences, Srinagar
Acharya Tulsi Regional Cancer Treatment and Research Institute, Bikaner
Cancer Hospital & Research Institute, Gwalior
Govt Arignar Anna Memorial Cancer Hospital & Research Institute, RCC, Kanchipuram
Indira Gandhi Institute of Medical Sciences, Patna
JIPMER, Regional Cancer Centre, Puducherry
Regional Cancer Centre Indira Gandhi Medical College, Shimla
Regional Cancer Centre Kamala Nehru Memorial Hospital, Allahabad
Regional Institute of Medical Sciences, Imphal
The Gujarat Cancer & Research Institute, Ahmedabad
Acharya Harihar Regional Cancer Centre, Cuttack
Chittaranjan National Cancer Institute, Kolkata
MNJ Institute of Oncology and Regional Cancer Centre, Hyderabad
Pt.B.D.Sharma Post Graduate Institute of Medical Sciences, Rohtak
Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow

Source: NCRP

POPULATION BASED CANCER REGISTRY, NAGALAND
NAGA HOSPITAL AUTHORITY, KOHIMA

WELCOME TO ARM 2016
PBCR – NAGALAND
NAGA HOSPITAL AUTHORITY, KOHIMA
- DR. V. KHAMO

P.I.: Dr. V. Khamo
Co. PI..: Dr. Kedozeto Punyu

Nagaland is a state in North east India. It borders the state of Assam to the west, Arunachal Pradesh and part of Assam to the north, Burma to the east and Manipur to the south. The state capital is Kohima and the largest city is Dimapur. It has an area of 16,579 square kilometers (6,401 sq mi) with a population of 1,980,602 per the 2011 census of India, making it one of the smallest states of India.

The state is inhabited by 16 major tribes: Ao, Angami, Chang, Konyak, Lotha Sumi, Chakhesang, Khiamniungan, Dimasa Kachari, Phom, Rengma, Sangtam, Yimchunger, Kuki, Zeme-Liangmai (Zeliang) and Pochuryas well as a number of sub-tribes. Each tribe is unique in character with its own distinct customs, language and dress. Two threads common to all are language and religion – English is in predominant use. Nagaland is one of three states in India where the population is mostly Christian. Nagaland became the 16th state of India on 1st December 1963. Nagaland is a mountainous state. It has a largely monsoon climate with high humidity levels.

Cancer - a major public health problem in the state

Nagaland is a home to diverse indigenous tribes, with festivals and markets celebrating the different tribes' culture. Its capital city of Kohima suffered heavy fighting in World War II, commemorated by memorials at the Kohima War Cemetery. The Nagaland State Museum exhibits ancient weaponry, a ceremonial drum and other traditional Naga cultural artifacts.

Every year about 600 new cases are detected in the state and more than 50% of cancer patients receive only Chemotherapy or no treatment at all. There is huge drainage of state exchequer for treatment of cancer patients going outside the state. Cancer patients especially those coming from villages and remote areas are unable to afford the treatment. Moreover, most of them cannot even afford journey fares due to financial problems such as low income, no savings and poor road connectivity. Many cancer patients are not treated due to non-availability of cancer care facilities in the state.

Visit of Dr Harsh Vardhan
Union Minister,
Science & Technology & Earth Sciences
at PBCR Nagaland Office

Staff of PBCR – Nagaland

Office of PBCR, Nagaland

Social Investigator interviewing patient

Field work,Mon District,Nagaland

Cancer Awareness Programme

POPULATION & HOSPITAL BASED CANCER REGISTRY, MANIPUR STATE

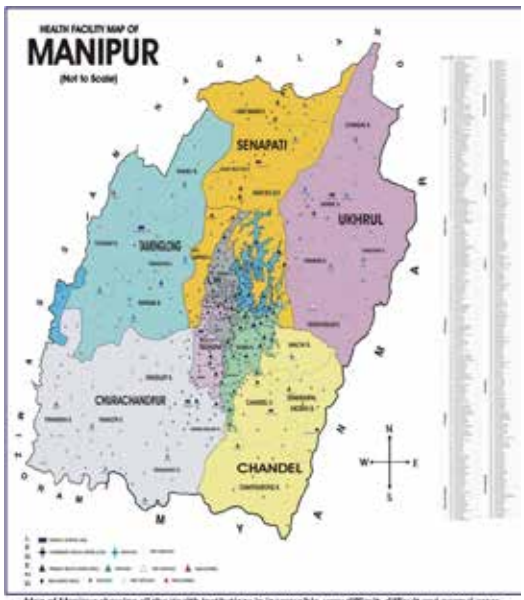
Regional Institute of Medical sciences, Imphal

P.I. : Dr. Kaushik Debnath, Prof. & Head. Dept. of Pathology
Co. P.I.: Dr. Punyabati Devi, Prof. Dept. of Pathology
Dr L. Rajesh Singh, Asst. Prof. Dept. of Pathology

Research Officer: Dr. H Satyajyoti Singh

Introduction: The Population Based Cancer Registry (PBCR), RIMS Imphal is functioning in the department of Pathology, Regional Institute of Medical Sciences (RIMS) since January 2003. It is one of the Cancer Registries in North East India functioning under NCRP of ICMR. Initially, it covered only the most populated district of Imphal West with an area of 519 Sq.Km and an estimated population 4,39,532. Since January 2005, the registry covers the whole state of Manipur with total area of 22,327 Sq.Km and total population of 28,55,794 (2011 census) of which 14,38,586 are male and 14,17,208 are female. Nearly 90% of the total land area is covered by hills and the plain area occupies the centre of the mainland. The population covered is 29% urban and 71% rural. The overall density of population of the state is 128 persons per sq.km.

HBCR started functioning from January 2014 with two social investigators and a data entry operator as staff. They have been collecting incidence data from various departments and sections of the base institute. They are actively following up the cases from the records, particularly on breast, cervix uteri and head & neck cancers under the programme 'Pattern of Care and Survival Studies (POCSS)'.



Map of Manipur showing all the Health Institutions in inaccessible, very difficult, difficult and normal areas.

Working of Registry: Since cancer is not a notifiable disease in the state of Manipur, the mode of data collection is entirely active. Direct interview of the patient or their attendants is possible in most of the cases that come for treatment at our institute, the only centre with cancer treatment facility in the State.

HBCR staff interviewing patient

HBCR staff along with nursing staff at Radiotherapy ward, RIMS Imphal

PBCR and HBCR staff at Department of Pathology

Every month all the staff of the registry jointly assess our activities, discuss on the difficulties and problems faced by us and thereby sorting out a possible solution.

Number of cases registered during the year 2010-2014 at PBCR, Manipur

Gender	#	%	CIR	AAR	TR
Male	3316	45.9	45.4	69.7	107.9
Female	3909	54.1	54.2	70.0	135.4
Total	**7225**	**100.0**	**100.1**	**133.6**	**239.2**

Number(#) of Registered Cases of Cancers, Manipur : 2010-2014

Details	Year	Incidence				Mortality			
		Male	Female	Total	Trend	Male	Female	Total	Trend
Five Years	**2010**	**676**	**743**	**1419**	↓	123	96	219	↑
	2011	599	673	1272	↑↑↑	191	113	304	↓
	2012	669	834	1503	↓↓	152	143	295	↑
	2013	683	807	1490	↑	162	156	318	↓
	2014	689	852	1541	↓↓	252	190	442	↓
	Total	**3316**	**3909**	**7225**		**880**	**698**	**1578**	

Leading Sites of Cancer during the year 2010-2014

Number, Proportion, CIR, AAR & TR of Leading Sites of Cancer, PBCR Manipur

MALES

Sl. No.	ICD-10	Site	#	%	CIR	AAR	TR
1	C33-34	Lung etc.	590	17.8	8.1	13.9	15.5
2	C16	Stomach	242	7.3	3.3	5.3	9.2
3	C11	Nasopharynx	201	6.1	2.8	3.8	8.8
4	C82-85,C96	NHL	173	5.2	2.4	3.2	5.3
5	C15	Esophagus	162	4.9	2.2	3.5	6.2
6	C44	Other Skin	134	4.0	1.8	3.0	4.6
7	C22	Liver	128	3.9	1.7	2.6	5.2
8	C19-20	Rectum	115	3.5	1.6	2.3	3.9
9	C92-94	Myeloid Leuk.	113	3.4	1.5	1.9	2.4
10	C32	Larynx	112	3.4	1.5	2.6	4.2
		Others	**1346**	**40.6**	**18.4**	**27.5**	**42.6**
		ALL Sites	**3316**	**100.0**	**45.4**	**69.7**	**107.9**

FEMALES

Sl. No.	ICD-10	Site	#	%	CIR	AAR	TR
1	C50	Breast	586	15.0	8.1	9.6	23.8
2	C33-34	Lung etc.	545	13.9	7.6	11.1	15.5
3	C53	Cervix Uteri	384	9.8	5.3	6.8	16.4
4	C73	Thyroid	276	7.1	3.8	4.2	7.6
5	C56	Ovary etc.	203	5.2	2.8	9.6	7.6
6	C23-24	Gall Bladder etc.	199	5.1	2.6	3.9	8.5
7	C44	Other Skin	155	4.0	2.2	3.0	4.7
8	C16	Stomach	140	3.6	1.9	2.8	5.2
9	C82-85,C96	NHL	129	3.3	1.8	2.3	4.4
10	C19-20	Rectum	108	2.8	1.5	1.9	3.9
	O&U	**Others**	**1184**	**30.3**	**16.4**	**21.1**	**37.8**
	All Sites		**3909**	**100.0**	**54.2**	**70.0**	**135.4**

CIR = Crude Incidence Rate; AAR = Age Adjusted Rate (Age Standardized Rate)

TR = Truncated Rate (AAR for the age groups 35-64 years)

Recent Activities: As such we are not running any population based programme on screening specific cancer sites. However, we do conduct cancer screening camps from time to time. Recently we organized a free cancer screening camp among women population in collaboration with 35th Assam Rifles at Maram, Senapati district of Manipur on 23rd February 2016.

Free Cancer Screening Camp for women at Maram, Senapati District

Bidi smoking woman in Ima market

Front View of Administrative Block, Regional Institute of Medical Science, Imphal

POPULATION BASED CANCER REGISTRY (PBCR) PATIALA & PUNJAB CANCER ATLAS (PCA)

PBCR - Patiala
P.I. : Dr. Vijayakumar Bodal
Co. P.I. : Dr. Mohanvir Kaur
Dr. Vandana Singla

PCA
P.I. : Dr. M.S.Bal
Co. P.I. : Dr. (Mrs) Harjot Kaur Bagga

Introduction: Population Based Cancer Registry Programme Patiala (PBCR) inaugurated by Minister of Medical Education & Research Punjab started work from June 7, 2011, in the Dept. of Pathology, Govt. Medical College Patiala with Dr. M S Bal as PI, Dr. Vijay Bodal & Dr. Ms. Harjot Kaur Bagga as Co-PI's. Three social workers, one statistician and one data entry operator were also in the team. Recognizing the PBCR work outcome, Punjab Cancer Atlas was installed in January 2013; and two more staff was employed. Dr. Manjit Singh Bal retired as Prof and Head, Dept. of Pathology on 31-03-2015 and Dr. Vijay Kumar Bodal was promoted as Principal Investigator (In-charge, Department of Clinical Pathology). Dr. Mohanvir Kaur and Dr. Vandana Singla were appointed as Co- Principal Investigators in the PBCR, Patiala. Dr. K.D Singh retired as Principal, Govt. Medical College, Patiala on 30-04-2016 and Dr. B. L. Bhardwaj is the Principal, Govt. Medical College, Patiala from 01-05-2016.

Working of PBCR, Patiala

Incident data collection: Trained Social Workers visit various hospitals and nursing homes and interview the patients who are either undergoing cancer treatment or are being investigated for cancer at the radiotherapy department. They also examine the case records maintained by various departments of these hospitals viz. pathology, hematology, radiology etc. All the information collected are cross checked for completeness. Sometimes the patient may have registered in more than one hospital. Duplicates elimination is done to ensure that each patient is included only once in the data.

Mortality data collection: Social workers visit the offices of Patiala Municipal Corporation and committees, PHC's under Patiala District to collect information on deaths where the death certificates state the cause of death as cancer or 'tumours'. The death record is then matched with the morbidity records. Cases unmatched are registered as Death certificate only cases (DCO's) in that corresponding year. All cause mortality data is also collected for that corresponding year and sent to NCDIR, Bangalore for further matching of the incident cancer cases belonging to district Patiala registered by other participating centers.

Electronic capture and processing of data: NCDIR-NCRP has installed the software application, PBCRDM 2.1 at PBCR Patiala to capture incidence and mortality data with international standard checks on data quality at both data entry and processing stages. A de-duplicate programme lists probable duplicate registrations of the same patient from different sources (hospitals/labs/diagnostic centers). Matching of mortality with incidence is done after finalization of data quality. The data is submitted to NCDIR-NCRP.

At NCDIR-NCRP: The cancer data of Patiala residents collected from hospitals under Punjab Cancer Atlas (project under NCDIR-NCRP) including cancer case registered under Mukhyamantri Scheme, Hospital Based Cancer

Registry data submitted by Rajiv Gandhi Cancer Institute New Delhi, PGI Chandigarh, Acharya Tulsi Regional Cancer Treatment & Research Institute Bikaner and Medanta Cancer Institute Gurgaon are also added to the PBCR data. A duplicate check of the data thus collected is done to eliminate duplicate registrations. All cause deaths submitted by the PBCR is matched with the incidence data. Unmatched mortality records form part of Death Certificates Only (DCO). Generation of statistical tables are done and sent to PBCR.

Promotional Events & Meetings: PBCR, Patiala 2015-2016

1. **April 1-30th 2015:-** Supervision and Verification of Diabetes, CVD, Stroke and Cancer Cases in the Malwa Region of Punjab, District Barnala, Mansa, Bathinda and Muktsar done by Dr. Manjit Singh Bal, Dr. Vijay Kumar Badal, Dr. Sathyaprakash, Dr. Jaspreet Kaur, Mr. Vicky Harinderpal, Mr. Dalvir Singh, Ms. Monika, and Ms. Parvinder Kaur.

2. **May 25th 2015:-** Meeting Sh. Hussan Lal , IAS Secretary Research & Medical Education and Managing Director, Punjab Health Systems Corporation of Punjab and handing over ten hard copies of PBCR, Patiala Report 2011-2012 attend by Dr. Vijay Kumar Bodal, Mr. Vicky Harinder Pal for Publishing of Population Based Cancer Registry Report year 2011-2012.

3. **June 8th & 25th 2015:-** Meeting with Principal Secretary Smt. Vini Mahajan, (IAS) Health and Family Welfare of Punjab attended by Dr. Vijay Kumar Bodal, Mr. Vicky Harinder Pal for publishing PBCR Report of the year 2011-2012 and Hand over Five copies of 2011-2012, Patiala Report.

4. **July 24th 2015:-** Meeting with Sh. Hussan Lal , IAS Secretary Research & Medical Education and Managing Director, Punjab Health Systems Corporation of Punjab by Dr. Vijay Kumar Bodal and Mr. Vicky Harinder Pal for Publishing of PBCR Report 2011-2012 and the Report of Punjab Cancer Atlas, 2012-2014.

5. **August 7th 2015:-** Meeting with Civil Surgeon of Hoshiarpur regarding Cancer patient data by Dr. Vijay Kumar Bodal and Mr. Vicky Harinder Pal.

6. **October 2nd 2015:-** Meeting with Dr. C. S. Pruthi Chairman & Managing Director of Capitol Hospital Jalandhar to provide cancer data for NCRP by Dr. Vijay Kumar Bodal and Mr. Vicky Harinder Pal.

7. **October 3rd-5th 2015:-** 31st ARM of NCRP at Mumbai attended by Dr. Vijay Kumar Bodal (PI), Dr. Manjit Singh Bal (Co-PI) & Dr. Shruti (Research Scientist).

8. **October 5th-11th 2015:-** IARC meeting at Mumbai attended by Dr. Vijay Kumar Bodal (PI) and presented the paper 'Patterns of Cancer. In Punjab: A study of 500 cases'.

9. **November 2015:-** Meeting with Civil Surgeon Bathinda and Muktsar regarding collection of Cancer patient's data by Dr. Vijay Kumar Bodal, Mr. Dalvir Singh, Ms. Monika, Ms. Parvinder Kaur and Ms. Gulshan.

10. **December 7th 2015:-** Meeting with Civil Surgeon Mathorda regarding the Cancer Patients Data by Dr. Vijay Kumar Bodal and Mr. Dalvir Singh.

11. **February 5th 2016:-** Meeting with Smt. Vini Mahajan (IAS), Principal Secretary Health and Family Welfare Punjab to discuss the Report of PBCR, Patiala 2011-2012 and Punjab Cancer Atlas, by Dr. Vijay Kumar Bodal and Mr. Vicky Harinder Pal.

12. **February 10th 2016 :-** Report of PBCR,

Patiala year 2011-2012 released by Sh. Anil Joshi Cabinet Minister Local Government, Medical Education&Research, Punjab, Sh. Hussan Lal, IAS Secretary Research & Medical Education and Managing Director, Punjab Health Systems Corporation, Dr. Manjit Kaur Mohi Director, Medical Education & Research, Punjab, Dr. Vijay Kumar Bodal (PI), Dr. Manjit Singh Bal (Co-PI), Dr. K. D Singh (Principal) and Dr. B. L Bhardwaj (Medical Superintendent) Govt. Medical College & Rajindra Hospital, Patiala.

Sources of Data of PBCR & PCA Patiala

1. Govt. Rajindra Hospital and Govt. Medical College Patiala. (Radiotherapy Department, Pathology Department & Others)
2. Mata Kaushalya Hospital, Patiala.
3. Amar Hospital, Patiala.
4. Govt. TB and Chest Hospital, Patiala.
5. Gian Sagar Hospital, Banur, Patiala.
6. Visit to Private Laboratories in various districts of Punjab.
7. Local Private Hospitals & Clinics of Patiala, Bathinda and Muktsar Sahib Districts of Punjab.
8. Visit to Civil Surgeon Office in Bathinda and Muktsar Sahib.
9. Municipal Corporations in Patiala, Bathinda and Muktsar Sahib Districts of Punjab.
10. Various Private Hospitals at Bathinda, Muktsar and Mohali.
11. PHCs and CHCs under Civil Surgeon in Patiala.
12. Mukhya Mantri Punjab Rahat Kosh Scheme.
13. Cancer Control Cell, Chandigarh.

PBCR, Patiala Staff:

1. Dr. Vijay Kumar Bodal	*Principal Investigator, In-charge, Dept. of Clinical Pathology, GMC, Patiala*
2. Dr. Mohanvir Kaur	*Co-Principal Investigator*
3. Dr. Vandana Singla	*Co-Principal Investigator*
4. Dr. Shruti	*Research Scientist*
5. Mr. Vicky Harinder Pal	*Data Entry Operator*
6. Ms. Monika	*Social Worker*
7. Ms. Parvinder Kaur	*Social Worker*
8. Mr. Dalvir Singh	*Social Worker*
9. Ms. Gulshan	*Social Worker*

PHOTOS OF PBCR PATIALA WORKING AND MEETINGS

Report of PBCR, Patiala year 2011-2012 being Released by Sh. Anil Joshi Cabinet Minister Local Government, Medical Education & Research, Punjab, Sh. Hussan Lal , IAS Secretary Research & Medical Education and Managing Director, Punjab Health Systems Corporation, Dr. Manjit Kaur Mohi Director, Medical Education & Research, Punjab, Dr. Vijay Kumar Bodal (PI), Dr. Manjit Singh Bal (Co-PI), Dr. K. D Singh (Principal) and Dr. B. L Bhardwaj (Medical Superintendent) Govt. Medical College & Rajindra Hospital, Patiala.

Sh. Hussan Lal , IAS Secretary Research & Medical Education and Managing Director, Punjab Health Systems Corporation, Visited PBCR, Patiala with DRME Punjab Dr. Manjit Kaur Mohi, Dr. Vijay Kumar Bodal (PI, PBCR, Patiala), Dr. B. L. Bhardwaj (Principal, GMC, Patiala), Dr. Vandna Singla (Co-PI, PBCR, Patiala).

Meeting with Dr. Gurmeet Kaur Sethi Principal Medical College Baba farid University Health Sciences , Dr. Vijay Kumar Bodal PI and Mr. Dalvir Singh

Dr. Manjit Kaur Mohi Director, Medical Education & Research, Punjab visited PBCR, Patiala. Dr. K. D Singh (Principal, GMC, Patiala), Dr. Vijay Kumar Bodal (PI, PBCR, Patiala), Dr. B. L Bhardwaj (Medical Superintendent, RHP, Patiala), Dr. Vandna Singla (Co-PI, PBCR, Patiala).

Dr. Vijay Kumar Bodal (PI) meeting with PBCR Staff, Patiala about collection of cancer data.

Dr. Mohanvir CO-Principal Investigator giving instructions to PBCR, Patiala Staff.

Data discussion with Dr. Charanjit Singh Pruthi Chairman & Managing Director of Capitol Hospital , Dr. Vijay Kumar Bodal (PI) and Mr. Vicky Harinder pal

PBCR - ARUNACHAL PRADESH
PASIGHAT

P.I. : Dr K. Jerang

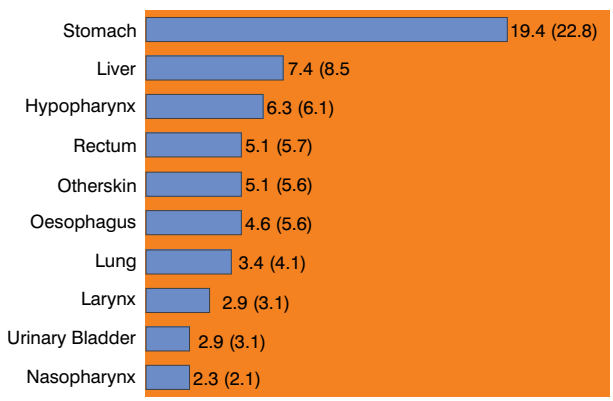
PBCR at General Hospital Pasighat in Arunachal Pradesh covers the eastern part of the state which includes ten districts namely East Siang, Upper Siang, Changlang, Lohit, Lower Dibang Valley, Tirap and the newly created districts of Siang, Anjaw, Namsai and Longding with a **total population of 6,22,817 (3,25,156 males, 2,97,659 females)** according to census report 2011. These ten districts cover an area of **41,668** sq kms with average population density of 17 per sq.km.

This kind of research project is challenging given the poor health infrastructure and poor surface transport and telecommunication

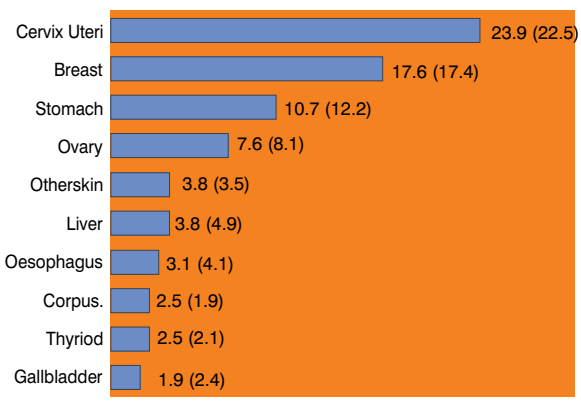
connectivity in these parts. However, PBCR staffs are putting in their best to generate reliable cancer data for our region. We have shown below our consolidated figures for the 2012 to 2014.

Ten Leading Sites of Cancer (2012-2014) (AARs given in Parentheses)

MALES



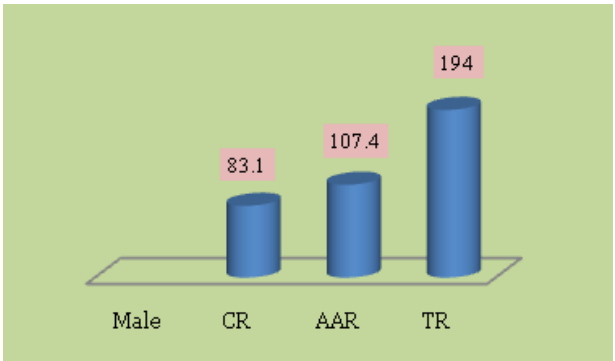
FEMALES



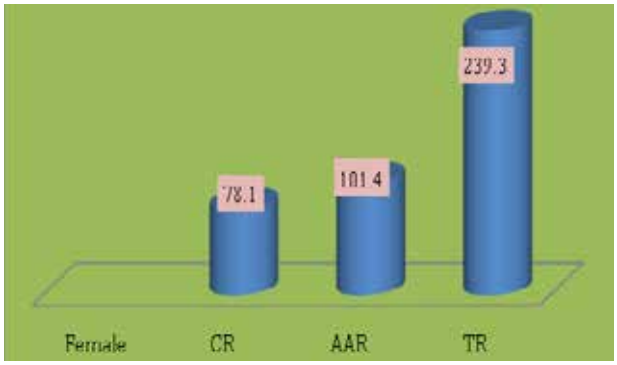
Crude Rate (CR), Age Adjusted (AAR) and Truncated (TR) PASIGHAT - (2012-2014)

Gender	Crude Rate	AAR	TRUNCATED
Male	83.1	107.4	194.3
Female	78.1	101.4	239.3

Male 2012-2014



Female 2012-2014



District wise data of Cancer cases male 2012 -2014

2012-2014	2012	2013	2014	Total	%
East Siang	43	46	35	124	37.3
Upper Siang	12	17	14	43	13.0
Lower Dibang Valley	6	9	12	27	8.1
Lohit	12	16	14	42	12.7
Tirap	14	23	12	49	14.8
Chanlang	20	14	13	47	14.2
Total	**107**	**125**	**100**	**332**	**100.0**

District wise data of Cancer cases Females 2012-2014

2012-2014	2012	2013	2014	Total	%
East Siang	37	40	44	121	38.1
Upper Siang	10	10	3	23	7.2
Lower Dibang Valley	8	16	16	40	12.6
Lohit	16	20	17	53	16.7
Tirap	9	27	11	47	14.8
Chanlang	11	9	14	34	10.7
Total	**91**	**122**	**105**	**318**	**100.0**

PBCR staff 2015 at its office, General Hosptial Pasighat

Field Duty at Jengging, Upper Siang District

Strategies undertaken by PBCR Pasighat to compile Data

1. Daily visit to indoor wards at General Hospital Pasighat is done by Social Investigators.
2. Awareness campaigns are done at District Hospitals, CHCs or PHCs to motivate doctors, health workers for registration of cancer cases.
3. Regular visits at Private Nursing Homes, Diagnostic centers, Pathological Laboratories and other Government Hospitals is done for extraction of cases. Registration log book is provided to private clinics/centers at Pasighat.
4. Due to unpredictable weather conditions such as flash floods, landslides during summer seasons, field duties are difficult. So this part of the season is utilized for visiting referral centers; while during winters, we travel to the districts.
5. Population here is scattered and sparse so identifying a patient is hard. Therefore local NGOs like Disha, United Ranglamja Welfare Association, NEICORD, Care Me Home and All Tutsa Welfare Society are sensitized about works of PBCR Pasighat as they are constantly in touch with the community.
6. Tele communications is also used as a tool to get mortality and incidence data.
7. Clinically suspected cases are also taken after one on one consultation with the district Doctors of the patient.

STAFF PBCR

Miss Miti Boko	*Social Investigator*
Miss Chanyam Lowang	*Social Investigator*
Mrs Moti Megu	*Statistician*
Mr Tayi Mize	*Programmer*
Mr Ogom Lego	*Data Entry Operator*

ARM PHOTOS


NATIONAL CANCER REGISTRY PROGRAM
31st ANNUAL REVIEW MEETING


NATIONAL CANCER REGISTRY PROGRAM
31st ANNUAL REVIEW MEETING


31ST ANNUAL REVIEW MEETING
- 6TH OCTOBER, 2015

PBCR & HBCR BANGALORE
KIDWAI MEMORIAL INSTITUTE OF ONCOLOGY, BANGALORE

P. I : Dr. K B Linge Gauda, Director, KMIO
Co. P. I : Dr. C. Ramesh, Prof. & Head, Department of Epidemiology & Biostatistics

Introduction: The Population Based Cancer Registry, Bangalore was established in 1981 by the Kidwai Memorial Institute of Oncology. The Hospital Based Cancer Registry KMIO was started in 1984 and both were linked to NCRP. In the 2012-2014 NCRP Report, the PBCR Bangalore reported 8371 cancer cases recorded by the PBCR in 2012. Lung was the leading site of cancer in Men and Breast cancer in females. The Hospital Based Cancer Registry, KMIO reported 8687 cancer cases seen during 2012. Among males Esophagus was the leading site (7.6%) of all male cancers and among females Cervix cancer was the leading cancer site with 29.4% of all female cancers. The HBCR has participated in the country wide special study "Patterns of Care and Survival Studies" of cancers of Head & Neck, Breast and Cervix conducted by NCRP. Based on the registry data, the department has conducted several case-control studies on cancers of esophagus, Breast, Oral, Stomach and Pharynx. Faculty of the department is actively involved in the training of Super Speciality / Post graduate students in the Speciality of Oncology covering topics on Epidemiology, Biostatistics and Clinical Research. Training in Research Methodology and Biostatistics is also imparted by the faculty for students pursuing courses in Nursing and Allied Health courses in the Institute. The department has been involved in imparting practical training in the registry operations and ICD-O and ICD-10. The data of PBCR has been included in several volumes of Cancer Incidence in Five continents published by IARC. The staff of the department is involved in various cancer prevention and awareness activities conducted by the Institute.

Activities of the Cancer Registry at Bangalore (Both PBCR and HBCR): The Department of Epidemiology & Biostatistics completed two projects

1. Barriers related to Screening, Diagnosis and Treatment of Oral Cancer in India - Funded by Research Triangle Institute (RTI) International, USA
Principal Investigator – Dr. C. Ramesh

2. Understanding Delays in Breast Cancer Diagnosis and Treatment in India – A Formative

Study funded by the US National Institutes of Health
Principal Investigator – Dr. C. Ramesh

Training programmes were conducted to train Medical Records staff of sources contributing data to Bangalore PBCR.

Participation of Registry Staff in Meetings/ Conferences/Workshops:

1. Dr. B. R Gopala Krishnappa, Senior Biostatistician (PBCR) presented a paper "Trends in esophageal and stomach cancer incidence in Bangalore, India" in the International Association of Cancer Registries conference held on 08/10/2015 at Mumbai.
2. D. J. Jayaram, Senior Investigator (HBCR) presented a paper "Effect of

Tobacco and Alcohol drinking and risk of pharyngeal cancer in south Indian men" in the International Association of Cancer Registries conference held on 09/10/2015 at Mumbai.

The Director and staff of the Department of Epidemiology & Biostatistics participated in the 31st ARM held at Tata Memorial Hospital (5/10/2015-6/10/2015) at Mumbai.

Dr. K.B. Lingegowda
Director and PI (PBCR & HBCR)

Dr. C Ramesh
Professor and Head and Co-PI

Mr. Vijay C R
Assistant Professor

Dr. B R Gopala krishnappa
Senior Biostatistician, PBCR

Dr. C Ramesh and Dr. B.R. Gopala Krishnappa participated in "International Workshop on Cancer Awareness, Prevention, Screening and Early Detection for SAARC Nations" from 29th Feb to 3rd March 2016 organized by Delhi State Cancer Institute, New Delhi.

Dr. C. Ramesh:

1. Delivered a talk on "Will making Cancer a Notifiable Disease help ?" in the International Workshop on Cancer Awareness, Prevention, Screening and Early Detection for SAARC Nations, 2nd March 2016 organized by Delhi State Cancer Institute, New Delhi and was a panelist for Special Task force meeting for preparing white paper on cancer prevention for SAARC nations.
2. Delivered a talk on "Setting up of Hospital based cancer Registry and It's uses" at NCDIR, Bangalore on 8th Jan 2016.
3. Delivered a talk on "Epidemiology of Cancer in India'', in the CME programme organized by Adi Chunchanagiri Institute of Medical Sciences, Bellur on 5th Feb 2016.
4. Delivered talks on 1. HBCR, Principles & Methods and 2. Utility of HBCR data, at NCDIR, Bangalore on 16th Feb 2016.

Papers Published:

1. Financial barriers to oral cancer treatment in India: Patrick Edwards, Sujha Subramanian, Sonja Hoover, Chaluvarayaswamy Ramesh, Kunnambath Ramadas. Journal of Cancer Policy 7(2016) 28-31.
2. "Tobacco related Cancers- Trends in Population and Hospital based Cancer Registry, Bangalore, India". Vijay C R, Dr. Ramesh C, Dr, Gopalakrishnappa, Dr Lingegowda British Journal of Pharmaceutical and Medical Research (Accepted for publication)

Ph.D Awarded:

Mr. Gopala Krishnappa B R, Senior Biostatistician
(In charge) was awarded Doctorate by the Rajiv Gandhi University of Health Sciences for his work on "Cancer incidence and Mortality
A Population Based Cancer registry Approach Towards Time Trends and Future Predictions".

ABSTRACT

Background: During recent decades, an increase in the incidence of certain cancer has been reported in some countries and in India. This study sought to analyze cancer incidence trends in Bangalore by sex and morphology for the period 1982–2010.

Patients and Methods: Cancer cases were obtained from Bangalore Population Based Cancer Registry located in Kidwai Memorial Institute of Oncology from 1982. Time trends in sex- and age-standardized cancer incidence and Mortality rates were analyzed by site and histology over the study period, using relative change, Moving Average and Joinpoint regression analysis. Time trends in sex- and age-standardized cancer incidence and mortality rates were analyzed by using statistical tools like Joinpoint analysis. Annual percentage change over the study period were obtained by using regression and absolute relative change method.

Gastric cancer cases from HBCR, KMIO were studied. The various risk factors published for stomach cancer were collected and a specially designed core form was made for this study of risk factors of stomach cancer. The specially designed questions included patient's dietary factors, habits, environmental and other risk factors including Helicobactorial infection, dietary information estimates of the weekly frequency of intake of 19 foods and food groups, and the daily frequency of intake of six beverages. We present results from analyses of six food items (fresh fruit, raw vegetables, dried or salted fish, processed meat and others) and four beverages (Milk, Coffee, Tea, Alcohol) and other habits of association which includes information like cigarette smoking and chewing status, the number of cigarettes smoked per day and weekly intake of liquor.

Analyses were restricted to proportion among the food and beverage and other habits and to know the frequent combination of above items used in this group, a total of 344 interviews were completed. Since our maximum data are in ordinal scale and nominal scale we used proportion and two step cluster analysis was used to group patients Chi-square analysis at 95% confidence intervals was used to classify the high risk factors.

Results: The results reveals that in Karnataka 66,654 new cancer cases were estimated with a higher load among females compared to males. It is estimated that the total number of new cases in males would increase from 25271 for the year 2011 to 29704 for year 2020. In females, 32286 cases estimated in 2011, increased to 37450 for the year 2020. The leading sites of cancer in males were Stomach, Lung, Esophagus, Prostate and NHL, in females, cancers of Breast Cervix, Ovary, Esophagus and Mouth increased from 2000 to 2010. Age standardized esophageal cancer incidence rates increased in males. In females a significant trend over the study period was not seen. Overall gastric cancer

incidence rate decreased from 9.81 and 5.48 rates per 100,000 person years in 1982 to 1986 to 9.45 and 5.25 in 2002 to 2007 among men and women respectively.

Conditional logistic regression was used to estimate odds ratios (OR) for factors associated with the risk of stomach cancer. Among demographic characters significantly increased risk was found for education and economic status (OR 0.2 $P<0.01$ and 9.9 $P<0.01$). Dietary factors that were significantly associated with an increased risk were food grains other than rice, ragi (OR 0.2 $P<0.05$) salted meet fish (OR 1.6 $P<0.05$).

Conclusion: The Incidence and Mortality results shows an urgent need for controlling cancer by reducing exposure to risk factors and strengthening the existing screening and treatment facilities which are inadequate to tackle the present load. whereas esophageal adenocarcinomas increased
sharply in both sexes, among men, esophageal squamous cell cancer rates increased steadily

from mid 1982 on wards and a bit decline was observed from 1997, the same trend was observed in females. The gastric cancer incidence decreased over the study period. There was a marked decrease in the Incidence of esophago-gastric cancer presenting with unknown and unspecified morphology reported.

The consumption of vegetables, fruits, egg and fruit juice showed protective effect. It follows that a developing economy and improvement in living standard, with an associated increased intake of fruit and vegetables and reduced consumption of salt, can contribute to a reduction in the incidence of stomach cancer.

Dr. Pranab Mukherjee, Hon'ble president of India visited Kidwai Memorial Institute of Oncology on 23rd Dec 2015 for the Institute foundation day celebration and laying of Foundation stone for "State Cancer Institute"

Director, KMIO, Faculty and Staff of Registry participating in Cancer awareness programme and Rally at Tumkur on 27th June 2015 on the occasion of No Tobacco Day

Oral Cancer Exhibition organized by Department of Epidemiology and Biostatistics as a part of the National Symposium on Oral Cancer on 7th of November 2015. This exhibition was inaugurated by His Excellency, the Governor of Karnataka

Department Faculty and Staff involved in organizing Cancer awareness camp conducted at Christ college, Bangalore under the theme of “Healthy Youth for Healthy India” on 14 and 15th August 2015

Department faculty Compiling information and Breast cancer in the CD and Distributing to Garment factory workers and Participating in Rally

HOSPITAL BASED CANCER REGISTRY: ITS APPLICATIONS
REGIONAL CANCER CENTRE, THIRUVANANTHAPURAM

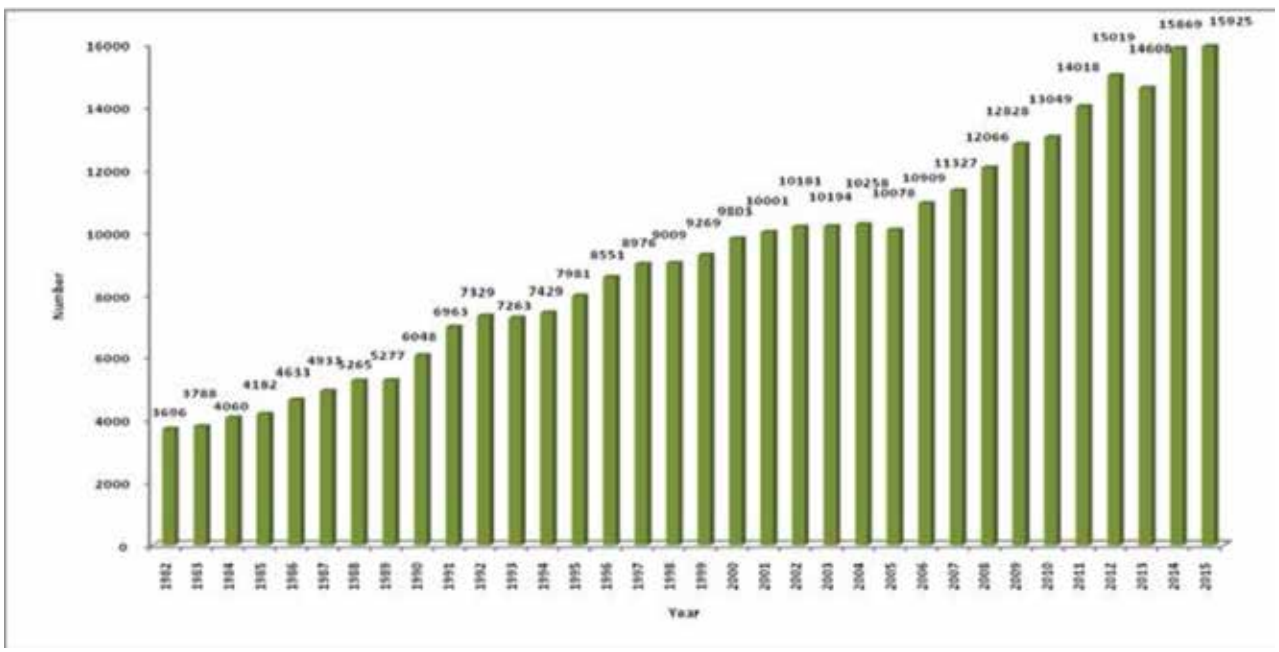
Dr. Aleyamma Mathew, Professor of Cancer Epidemiology & Bio-statistics
Dr. Paul Sebastian, Director & Professor of Surgical Oncology

Hospital-Based Cancer Registry (HBCR), Regional Cancer Centre (RCC), Thiruvananthapuram started in 1982 under the network of Indian Council of Medical Research, collects information on cancer patients attending the RCC. The registry has made significant achievements in data abstraction. The data abstraction and retrieval has been made online via intranet with easy data management since 2002. This is the first paperless registry in the country. Presently in RCC, patient load has increased more than 330% compared to 1982. Currently, it records nearly 16,000 new cases annually (Figure 1). Utilization of the HBCR, RCC data has been revolutionized through computerization. Electronic storage and processing of data has greatly enhanced the data quality and its analysis. Application of the HBCR, RCC data are listed below.

- An exhaustive report is published annually and provided in the RCC website
- Facilitates planning and administration for hospital services
- HBCR serves for medical audit
- Much faster responses to various Interpellations and other queries from both State and Central Governments
- No physical storage space needed
- No cost involved in printing of forms
- Documentation of case-records in electronic form has helped clinicians and other researchers to obtain the necessary information much faster
- Responses to various hospital cancer statistics for requested RTI
- Diagnostic information of HBCR is linked to all clinical services and the same has been viewed in the various clinics
- Retrieval of case-records for post-graduate thesis and for all retrospective studies in RCC
- Second primary malignancies, rare tumours, specific histology etc. are easily retrieved
- Follow-up information is provided for all studies
- Used for reproducing old case sheets when hard copies are not retrievable
- Training has been provided to other cancer hospitals for initiating HBCR
- HBCR, RCC data have been utilized for Population-based cancer registries located in Thiruvananthapuram, Kollam districts (RCC, Thiruvananthapuram), Kannur & Kasargod (MCC, Talassery) &Tamil Nadu registry (Cancer Institute, Chennai)

Considering the exhaustive use of HBCR data, it would be essential to set up hospital registries in all cancer hospitals in India. This would ultimately help to set up a nation-wide cancer registry in India. One potential challenge with multiple HBCRs is the fact that a patient may go to different hospitals. This would lead to duplicate records within the network of HBCRs. In order to mitigate this potential problem it would be essential for all HBCRs in each state to share data to one centre in their respective states and duplicate records can be eliminated by pooling of all HBCRs within each state. Setting up one centre in each state would help to establish a state-wide cancer registry. This would reduce the redundancy of efforts and each state can share the data to the nation and all the effort can be utilized to its fullest.

Annual number of new cancer patient registration, Regional Cancer Centre, Thiruvananthapuram (1982-2015)



HBCR - POST GRADUATE INSTITUTE OF MEDICAL EDUCATION AND RESEARCH, CHANDIGARH

P.I : Dr. S Ghoshal
Co. PI : Dr. R Kapoor,
Dr. Narendra Kumar

The Post Graduate Institute of Medical Education and Research, Chandigarh was one among the first three HBCRs started in 1982 by NCRP – ICMR, but ceased to function later. During the first report of NCRP in 1982 the PGI, Chandigarh reported 1237 cancer cases in males and 1438 cases among women. In the current registry report of 2015 the HBCR PGI, Chandigarh reported 9650 males and 7532 females for the three year period 2012-2014 ie., on an average 3217 males and 2510 females with cancer each year–Ed.

The Hospital Cancer Registry in Post Graduate Institute Chandigarh was started in the institute from 1st January, 2011 with grant from National Cancer Registry Programme of ICMR. The data collection is done from different departments of the institute, main source being the departments of Radiation Oncology and Pathology. Data are also collected from Paediatric Oncology division of Advanced Paediatric Centre, Clinical Haematology Division of Department of Internal Medicine. The patients are also enrolled from the departments of Pulmonary Medicine, Hepatology and Urology. The demographic and treatment details are collected and entered into the forms, which are transmitted online to the coordinating unit of National Cancer Registry Programme in Bengaluru. Follow –up of cancer cases is done by the respective departments and information is updated accordingly.

'Multitasking is our middle name'

We all are painfully aware of the fact that the cancer burden in our country is much bigger than the available professionals and the picture is the same in our tumour registry. Rather than waiting for the ideal condition, we at Chandigarh try to make the best of a bad situation by helping each other and multi-tasking. The radiation oncologist spares time to help in compiling tumour registry data, the registry staff spares time to take part in cancer awareness programmes. Here are some photographs where registry staff have joined the awareness drive in the city.

CANCER REGISTRY & EPIDEMIOLOGY AT MALABAR CANCER CENTRE, NORTH MALABAR, KERALA

P.I : Dr. Satheesan Balasubramanian
Co. PI : Dr. Saina Sunilkumar, Ms. Bindu T, Mr. Ratheesan K

Malabar Cancer Centre (MCC) is an autonomous institution under Health & Family Welfare department of Govt. of Kerala, started with an aim to establish a comprehensive cancer centre, providing the much required oncology services to the population of Northern Kerala and neighbouring areas of Karnataka and Tamil Nadu, and Union Territory of Puducherry (Mahe). It is the second largest cancer centre in Kerala with 200 beds. The main objective of the centre is not only to provide comprehensive cancer care but also to develop as a Research and Training Centre of International standards. The control and management of the centre are vested in the Governing Body consisting of 23 members with the Hon'ble Chief Minister of Kerala as the Chairman. The routine activities and functions of the Centre are supervised by the Executive Committee, with the Secretary, Department of Health and Family Welfare, Government of Kerala being the Chairperson of the Committee.

The Cancer Registry and Epidemiology division was established in 2011 and had started theHospital Based Cancer registry from the year 2010 .This is partially supported by NCRP, ICMR by giving technical support. The registry work started functioning with one doctor and one part time staff. Now the department has successfully completed five years hospital based cancer registry and published five hospital based cancer registry annual reports for the years 2010, 2011, 2012, 2013 and 2014. As years passed by we have expanded the division with two biostatisticians, one coding clerk& two data entry operators.

MPBCR - THREE DISTRICTS - TWO STATES

After completion of 3yrs of HBCR, we ventured into two prestigious projects of ICMR-NCRP, in the year 2014, Malabar Population Based Cancer Registry (MPBCR) & Patterns of Care and Survival Studies in Breast, Head & Neck & Cervix cancers. The work of MPBCR included two states - the two districts Kannur and Kasargod of Kerala & Mahe of Puducherry.

Starting PBCR was the need of the hour and it was high time for a cancer centre to start to prepare an accurate incidence and mortality database of cancer cases in the three districts. MPBCR was challenging to the team of cancer registry. The medical fraternity of Cancer Registry first visited Cancer Institute, Adayar, for a week, followed by two Biostatisticians after a year. A systematic strategy was planned before starting MPBCR. All the Medical colleges, private hospitals, labs, Govt.-PHC, CHC, Taluk, General, District hospitals; Vital statistics Dept., Pathology centers etc. were listed out. An Advisory Committee headed by District collector as Chairman was formed with Director as convener, District panchayat president as Patron, DMO, Principals, Private hospital board chairman, Deputy Director, Economics and Statistics Department, President, Kannur District Lab Owner's Association& legal

expert as members. Official letters were sent to all the listed sources for approval & co-operation. Staff was appointed on outsource basis. One month training was given to the field staff-4 social investigators & 4 data collectors. Government order from Kerala & Puducherry, Ministry of Health & Family Welfare was issued. So also, a letter of ICMR-NCRP, stating their technical support & DMO's order was obtained. A Pre-launching advisory committee meeting was held separately in the three districts. On 1st January 2014, we successfully launched MPBCR, the first Population Based Cancer Registry in Northern Kerala. The main role of advisory committee is to intervene when difficulty is faced in obtaining data from a particular source, firstly at the level of the members and then by the chairman. Resistance was faced at various levels, but the role of the District collector as chairman was a boost to this project. A 6 month report was presented in the advisory committee of the districts separately. Only new cancer cases who are residents of Kannur, Kasargod and Mahe districts for a minimum of 1yr are registered in MPBCR. Such a requirement is mandatory for all ICMR-HBCR registries. The proforma was circulated in English and local languages - Malayalam and Kannada taking into consideration the role of ASHA workers in house to house visit.

Patterns of Care and Survival Studies in Breast, Head & Neck cancers & Cervix are a funded project, with one coding clerk. All these ongoing studies are progressing well.

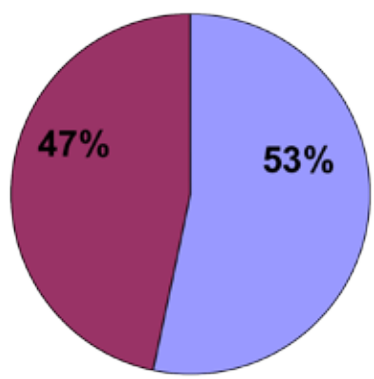
According to the Hospital Based Cancer Registry report there is increase in cancer cases registered at MCC.

Table 1: Year wise registration at MCC

Year	Number of Patients
2010	2252
2011	2576
2012	3143
2013	3825
2014	4042
Total	**15838**

Sex Distribution of Patients attending MCC

MALE: 8432 **FEMALE: 7406**

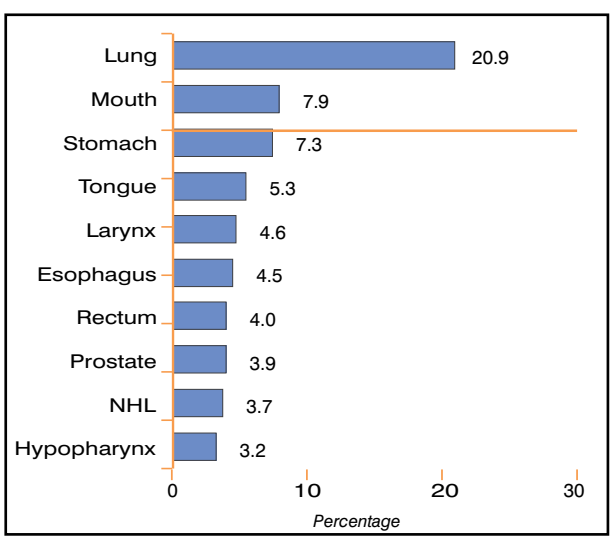


Ten leading sites of cancer among Males & Females, MCC

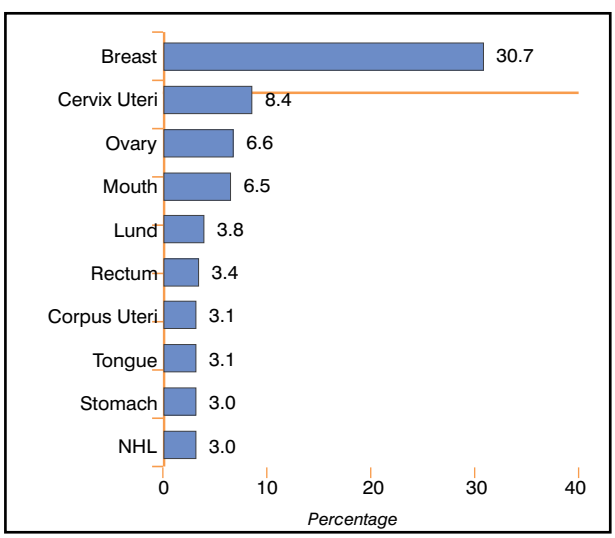
Male				Female			
Rank	**Sites**	**#**	**%**	**Rank**	**Sites**	**#**	**%**
1	Lung(C33-34)	1764	20.9	1	Breast(C50)	2271	30.7
2	Mouth (C03-06)	663	7.9	2	Cervix Uteri(C53)	619	8.4
3	Stomach (C16)	617	7.3	3	Ovary (C56)	490	6.6
4	Tongue(C01-02)	446	5.3	4	Mouth (C03-06)	484	6.5
5	Larynx (C32)	384	4.6	5	Lung etc. (C33-34)	278	3.8
6	Esophagus (C15)	381	4.5	6	Rectum (C19-20)	255	3.4
7	Rectum (C19-20)	340	4.0	7	Corpus Uteri (C54)	230	3.1
8	Prostate (C61)	330	3.9	8	Tongue (C01-02)	229	3.1
9	NHL(C82-85,C96)	316	3.7	9	Stomach (C16)	225	3.0
10	Hypopharynx(C12-13)	268	3.2	10	NHL (C82-85,C96)	221	3.0

Ten leading sites of cancers among males & females, MCC

Male



Female



Advisory Committee: For the smooth functioning of MPBCR, the department constituted separate advisory committee board for Kannur, Kasargod and Mahe as the District Collector (Kannur &Kasargod) and Regional Administrators (Mahe) as Chairmen. The members of the advisory committee meeting in different districts are as follows:

Kannur & Kasargod Districts

1. District Collector, Kannur& Kasargod (Chairman)
2. District Medical Officer, Kannur& Kasargod (member)
3. Deputy Director, Economics and Statistics Department, Kannur& Kasargod (member)
4. Principal, Pariyaram Medical College (member)
5. Principal, Kannur Medical College, Anjarakkandy (member)
6. Chairman, Private Hospital Board, Kannur(member)
7. President, Kannur District Lab Owner's Association(member)
8. Legal expert (Member)
9. Director , Malabar Cancer Centre (Convenor)
10. Patron : District Panchayat President

Mahe District

1. Regional Administrator of Mahe (Chairman)
2. Deputy Director, General Hospital (member)
3. Municipal commissioner (member)
4. Principal,Mahe Dental College (member)
5. Legal expert nominated by MCC (Member)
6. Director ,Malabar Cancer Centre or his nominee (Convenor)

District wise distribution of Hospitals visited for MPBCR during 2015:

Kannur District

Name	Number
Private Hospitals	22
Government Hospital	4
Cancer Centre	1
PHC	82
CHC	9
Co-operative Hospital	7
Medical Colleges	2
Pain &Palliative Centre	5
Taluk Hosptial	4
District Hospital	1
Private Laboratories	3
Total	**140**

Kasargod District

Name	Number
Private Hospitals	14
PHC	38
CHC	7
Pain & Palliative Centre	2
Taluk Hosptial	1
District Hospital	1
Private Laboratories	2
Nursing Home	2
Total	**67**

Mahe District

Name	Number
Private Hospital	1
PHC	1
CHC	1
Pain & Palliative Centre	1
District Hospital	1
Total	**5**

Data collected from outside the districts:

Information on the Patient's attending hospitals outside the three study areas were also obtained for MPBCR, since some patients from our region sought treatment at different hospitals outside the study districts. Thus collection of patient's data from major hospitals outside these three districts such as RCCTVM, Calicut Medical College, MIMS, Baby memorial hospital, KMC Mangalore, Amrita Institute of Medical Sciences Kochi were also done. The data from these centers are of great value in assessing the burden of disease in this region. Similarly, Kasargod is in the border area of Karnataka. Some of the patients from this district are registered for treatment at different hospitals in Mangalore. Thus the data from hospitals in Mangalore were also collected towards MPBCR. The journey to MPBCR is still half way through. Involvement of local self government bodies is considered in smooth implementation. The success of the project largely depended on the dedicated effort of the staff of the cancer registry. The relentless effort of Dr. Saina Sunil Kumar, Ms. Bindu, Mr. Ratheesan and other field staff are laudable and Dr. Saina's leadership qualities are evident in the success of Cancer registry of MCC.

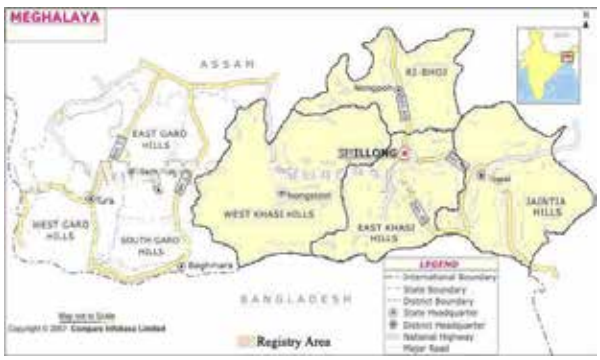
Dr. Satheesan, Director

Cancer registry team

PBCR Team

POPULATION BASED CANCER REGISTRY - MEGHALAYA
CIVIL HOSPITAL - SHILLONG

PI : Dr. W B Langstieh
Co. PI : Dr. (Ms) B Sohliya, Dr. L Purnima Devi,
Dr. H. Dkhar



Meghalaya is one of the hill stations in the north-eastern part of India. The word "Meghalaya" comes from the Sanskrit word which means the Abode of Clouds. The state shares its border on the north and east with Assam and south and west with Bangladesh. As per 2011 census, the state has a population of 29,66,889 and is the 23rd most populous state in the country. Meghalaya is spread over an area of 22,429 square kilometers and lies between 20.10 N and 26.50 N latitude and 85.490 E and 92.520 E longitude. Shillong the capital is also known as the Scotland of the East and the Shillong Metropolitan area has a population of 354,325. The Meghalaya tribes are mainly classified into three groups – Garos, Khasis and Pnars or Jaintias. The most noteworthy feature of tribes of Meghalaya is their parental lineage. The tribes of Meghalaya follow matrilineal lineage.

The staple diet of all the tribes is rice consumed with red meat/ chicken / fish and vegetable. It is the habit of all the tribes to chew betel - nuts with lime paste and betel – leaf and with or without tobacco. Rice beer is very common among the tribes; rice beer is prepared by fermenting rice and its consumption compulsory during any festivals and religious occasions. There has been a strong indication for an association of betel – nut consumption with the higher incidence of esophageal Squamous Cell Carcinoma. It has been observed that the average onset age of betel – nut chewing and tobacco smoking/chewing in the state is 12 – 14 yrs in both the sexes and it has also been observed that the average onset age of alcohol consumption in the state is 15 – 17 years, so all these features contribute to the increase in cancer incidence. The younger age at initiation, the risk of developing cancer is enhanced.

Population Based Cancer Registry Meghalaya is one of the 11 Registries of the North Eastern States of the country, under the NCRP – ICMR. The registry covers East Khasi Hills District, West Khasi Hills District, South west Khasi Hills District, East Jaintia Hills district, West Jaintia Hills District and Ri-Bhoi District, with a registry area of approximately 14,262 sq kms. (Excluding Garo Hills) and with an estimated population of 18.6 Lakhs.

Although the centre of the registry is at Civil Hospital Shillong, the office and the working of the registry is at Pasteur Institute under the Directorate of Health Services (Research), Shillong.

Human Resources:

Staff:

Medical Officer	- 1
Statistician	- 1
Programmer	- 1
Data entry operator	- 1
Social Investigators	- 3

Data abstraction of Incidence and Mortality is routinely performed by the Social Investigators after collecting data from various hospitals, pathological labs as well as practitioners of alternate medicine, either through direct contact with patients or from medical records section. Follow-up through case sheets, telephonic conversations with the patients (or relatives) and home visits were also done, the data is then entered into the database and are subjected to a series of quality checks with the tools provided in the PBCRDM 2.1 software.

Some of the difficulties faced by the staff in cancer registration is the reluctance of patients to furnish detailed information during follows up, either by telephonic conversation or home visits, the rough terrain of registry area create difficulties for home visits especially in rural areas. Since there is no computerized data and improper system of death registration, the staff was unable collect the All Cause Mortality. All health institutions in the state are equipped with a latest technology for early cancer detection in their respective laboratory. The following is a list of sources of registration covered by the PBCR Meghalaya.

Hospitals:

1. Civil Hospital Shillong
2. Woodland Hospital Shillong
3. Bethany Hospital Shillong
4. Super Care Hospital Shillong
5. NEIGRIHMS, Shillong
6. Nazareth Hospital Shillong
7. Ganesh Das Hospital Shillong
8. Civil Hospital Jowai
9. Civil Hospital Nongpoh
10. Civil Hospital Nongstoin
11. Dr. Norman Tunnel Hospital Jowai
12. Dr.H Gordon Roberts Hospital Shillong
13. Dr. BBCI, Guwahati
14. Christian Medical College, Vellore
15. North East Cancer Hospital and Research Institute Jorabat

The following laboratories in Shillong have actively supported the PBCR

1. North Eastern Diagnostic Centre (NEDC)
2. Melari Diagnostic Laboratory
3. Clinical Pathology
4. Sendro Polyclinic
5. Shillong Diagnostic

The following Vital statistics departments are regularly visited for information collection

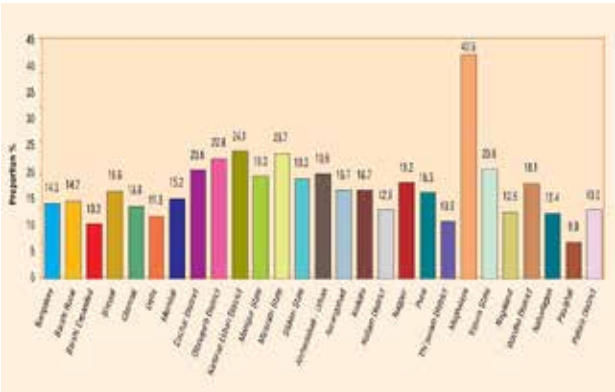
1. DMHO Shillong
2. DMHO Jowai
3. DMHO Nongpoh
4. DMHO Nongstoin
5. The Municipal Board Shillong
6. The Municipal Board Jowai

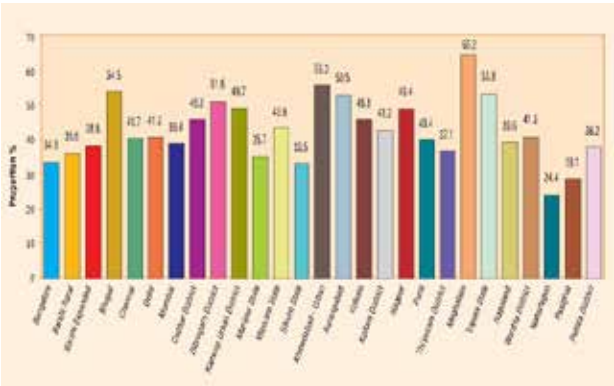
Cancer burden in the country is increasing, especially in the North Eastern part of the country compared to the main land. In Meghalaya, the incidence rates in Males is more than in Females like in the rest of the country which suggest that

cancer occurrence among Males is higher than that in Females. In Meghalaya, oesophagus is the leading sites of cancer both in Males and Females. According to the three year report of Population Based Cancer Registries: 2012-2014 published by the National Cancer Registry Programme in 2016, East Khasi Hills District of Meghalaya shows the highest relative proportion of Tobacco Related Cancer for both men and women.

Proportion (%) of Tobacco Related Cancers (TRCs) Relative to All Cancers

Males **Females**





Some important life habits practiced in Meghalaya:

Tobacco Smoking

Smoking of Pork meat

Chewing betel - nut

Rice and Meat

Betel - Nut

Improper dietary practices might be the main causes of cancer occurrence in this part of the region. Although some reasearch have been done on the causes of cancer in the state, more comprehensive reasearch must be taken to eradicate the burden of cancer in the state.

PBCR & HBCR TRIPURA
CANCER INCIDENCE & PATTERNS

P.I : Dr. Gautam Majumdar
Co. PI : Dr. Santi Ranjan Pal

Tripura is the 3rd smallest state and one of the seven N.E. states in India. The state is bordered by Bangladesh on the West, South and the North, by Assam on the North-East and by Mizoram on the East. Tripura is thus largely exposed to international border with Bangladesh. Tripura was a land ruled by the Rajas. A line of 74 Rajas had ruled over Tripura after which the Rajas were called by the title of 'Manikya'. Tripura was a princely state at the time of India's Independence, and was integrated with the Indian Union on October 15, 1949 as Part C state. The state has eight districts, which are North Tripura, Unokoti, Dhalai, Khowai, West Tripura Sepahijala, Gomati and South Tripura. Agartala is the state capital.

Table 1: The districts of Tripura and average annual incidence in each district

District	Area in sq.km.	Population*	Headquarter	No. of Ca cases 2010 to 2014	Average annual incidence rate
North Tripura	1422.19	417441	Dharmanagar	760	36
Unokoti	686.97	276506	Kailasahar	471	34
Dhalai	2426.00	378230	Ambassa	528	28
Khowai	1377.28	327564	Khowai	698	42
West Tripura	983.00	918200	Agartala	3741	81
Sepahijala	1043.58	483687	Bishramganj	1370	57
Gomati	1393.11	441538	Udaipur	956	43
South Tripura	1514.322	430751	Belonia	1157	53
Total	**10846.452**	**3673917**		**9681**	**53**

*(Notes: Based on 2011 Population Census).

A diverse ethnic element among the people of Tripura is that there are two major racial elements, namely, Indo-Aryans represented by the Bengalese and the Indo-Mongloids represented by a few communities like Tripuris, Reangs, Jamatis, Noatias, Kukis, Holams, Chakma, Mogh, and Lushai. Besides these nine major tribes, there are ten more tribes. All the nineteen tribes are classified as Scheduled Tribes. The Tripuris are the original inhabitants of the state. They constitute a little over 16% of the total and 57% of the tribal population of the state. Over time, a section of this community came into close contact with the Bengali settlers, and was much influenced by their language, culture and custom.

Of 3673917 total population of the state, 1166813 numbers are of tribal origin (31.76%) distributed in eight districts as below. A total 9681 cancer cases have been registered in PBCR during 2010-2014. Out of which only 1445 numbers are of ST people (14.93%).

Table 2: Population distribution in the district and registered cancer patients 2010-2014

District	Population	Tribal population		Registered cancer patient (2010-2014)		Registered tribal cancer patient (2010-2014)	
	Total	Total	(%)	Total	(%)	Total	(%)
North Tripura	417441	117106	10.4	1157	11.95	168	11.63
Unokoti	276506	62320	5.34	956	9.88	186	12.87
Dhalai	378230	210608	18.05	1370	14.15	206	14.26
Khowai	327564	139537	11.96	3741	38.64	440	30.45
West Tripura	918200	176596	15.13	698	7.21	188	13.01
Sepahijala	483687	119401	10.23	528	5.45	127	8.79
Gomati	441538	188554	16.16	760	7.85	79	5.47
South Tripura	430751	152691	13.09	471	4.87	51	3.53
Total	**3673917**	**1166813**	**100.36**	**9681**	**100**	**1445**	**100.01**

Agriculture and allied activities is the mainstay of the people. There is a preponderance of food crop cultivation over cash crop cultivation, the principal crop being paddy. The climate of the state is generally hot and humid. The average maximum temperature is 35°C in May – June and the average minimum temperature is 10.5°C in December – January. The average rainfall is around 230 cm/annum. The monsoon starts generally in April and continues up to September. The pleasant season lasts only for about two months (September – October) then follows winter which continues up to February. The demographic profile of the state is characterized by low birth rate and death rate, moderate level of infant mortality rate, relatively young age structure (because of high birth rate in the past), and moderate level of population growth despite international migration from Bangladesh. Though population density is low, it increased from 196 persons per square km in 1981 to 304 persons per sq. km in 2001. The sex ratio, defined as number of females per 1,000 males, was 950 in 2001 which was higher than the national figure of 933. Over a period of hundred years (1901-2001), the annual average growth rate of population in Tripura had varied from 1.8 – 4.2, the exception being the decade 1951-1961 when it attained 7.9 per cent growth rate due to the Partition.

- It becomes evident from the table that cancer incidence rate per lakh population are 53, 43, 57, 81, 42, 28, 34 & 36 for South, Gomati, Sepahijala, West Tripura, Khowai, Dhalai, Unokoti and North Tripura district respectively. Though, average cancer incidence in the state is 53 per lakh population. There are 12% population in South district, 12% in Goamti, 13% in Sepahijala, 25% in West district, 9% in Khowai district, 10% in Dhalai district, 11% in North district and 8% in Unokoti district.

Though, 4% ST population belongs to South district, 5% Gomati, 3% Sepahijala, 5% West district, 4% Khowai, 6% Dhalai, 3% North district and 2% in Unokoti district out of 31.76% ST population in the whole state. Tribal population belongs to 31.76% of the total population in the state. But, only 14.9% cancer patients belong to ST in the state. These 14.9% ST cancer patients are distributed in South district (1.7%), Gomati (1.9%), Sepahijala (2.1%), West district (4.5%), Khowai district (1.9%), Dhalai district (1.3%), North district (0.8%) and Unokoti district (0.5%). More research and investigations are necessary to identify the reasons of low cancer incidence amongst tribal population especially in the districts of Dhalai, North & Unokoti.

PBCR Tripura

News

- Government of India has identified Regional Cancer Centre, Agartala to develop as State Cancer Institute (Tertiary Cancer Care Centre) under National Programme for Prevention of Cancer, Diabetes, Cardiovascular Disease and Stroke (NPCDCS). Necessary financial assistance has already been sanctioned for this purpose. One new B+G+6 building is under construction for this purpose.
- Hospital Based Cancer Registry has started functioning at Regional Cancer Centre, Agartala w.e.f. 1st January, 2015 with financial assistance from National Centre for Disease Informatics and Research (NCDIR), National Cancer Registry Programme (NCRP), ICMR, Bangalore.

Events organized / conducted / participated by the Registry

- One workshop on Cancer Registry with the role of sources of information is organized at Regional Cancer Centre, Agartala on 1st February, 2015 with representative of sources of information and the registry staff.
- A training program on Home Based Palliative Care Services organized at Regional Cancer Centre, Agartala for 10 days w.e.f. 1.2.16 to 10.2.16 with Doctors, Staff Nurses, Pharmacists, Statistician, Social Investigators, Social Workers, Programmer and Data Entry Operator. Eminent international personalities namely Dr. David Mackintosh, Australia, Dr. Drummond Christine, Australia, Dr. Sreedevi, Kerala, Dr. Jaya Krishnan, Kerala and Dr. M.R.Rajagopal, Kerala extended their co-operation during the training program.
- A workshop on Non-Communicable Diseases (Prevention, Screening and Management) organized at Regional Cancer Centre, Agartala for four days w.e.f. 14-17th September, 2015. Eminent Speakers from Christian Medical College, Vellore took the pain to attend the institute for training purpose.
- Five doctors attended International Workshop on Cancer Awareness, Prevention, Screening & Early Detection for SAARC Nations held at New Delhi w.e.f. February 29 to March 3, 2016.
- Four doctors attended Second National Course on Public Health Approaches to Non-Communicable Diseases w.e.f. 20th to 25th February, 2016 at United Services Institute of India, Vasant Kunj, New Delh.
- Four doctors attended training at Christian Medical College, Vellore during 18-23 January, 2016 on Non-Communicable Diseases (Prevention, Screening & Management).
- Four doctors attended training at Christian Medical College, Vellore during 11-16 April, 2016 on NPCDCS.
- Four Staff Nurses attended training at Christian Medical College, Vellore during 7-17 December, 2015 on NPCDCS.
- Four Staff Nurses attended training at Christian Medical College, Vellore during 1-11 February,

2016 on NPCDCS.

- One Doctor (Co-Principal Investigator) and two staff (Statistician & Social Worker) of PBCR attended Workshop for "Hospital Based Cancer Registries and Pattern of Care and Survival Studies" at National Centre for Disease Informatics & Research, National Cancer Registry Programme, Bangalore w.e.f. 17–19 February, 2016.
- Dr. Gautam Majumdar, Principal Investigator, PBCR Tripura is going to participate in a three week Executive Education Academy w.e.f. 27th July to 12th August, 2016 at Atlanta Emroy University, USA designed to provide Leadership & Capacity Building Training in Public Health in association with PH Leader, Public Health Leadership and Implementation Academy for NCDs .

NCD Workshop at RCC, Agartala

Registration Counter at RCC

HBCR Data Entry Room, RCC

Workshop on Cancer Registry

PBCR Data Entry room at RCC

PBCR-CACHAR DISTRICT

Dr Rini Bhattacharjya, Social Investigator, PBCR-Cachar

P.I : Dr. Sekhar Chakravarti
Co. PI : Dr. R. P. Banik

Introduction: Population based cancer registry acts as an ideal platform for undertaking research in cancer epidemiology and basic research. PBCR collects data on all new cases of cancer occurring in a well defined population resident in a particular geographical region. As a result, and in contrast to hospital-based registries, the main objective of PBCR is to produce statistics on the occurrence of cancer in a defined population and to provide a framework for assessing and controlling the impact of cancer in the community. Thus, the emphasis is on epidemiology and public health. The utility of PBCR data may be summarized as follows.

1. They describe the extent and nature of the cancer burden in the community which assist in the establishment of public health priorities.
2. They may be used as a source of material for etiological studies.
3. They help in monitoring and assessing the effectiveness of cancer control activities.

Data collection: Data collection is the systematic gathering of information from a variety of sources to get a complete and accurate picture of an area of interest. Data collection enables to answer relevant questions, evaluate outcomes and make predictions about future probabilities and trends. Accurate data collection is essential to maintain the integrity of research, making informed business decisions and ensuring quality assurance.

Process of cancer data collection: The information collected by cancer registries can be placed into four categories: patient demographics, tumour (cancer) identification, treatment, and outcome.

Demographic data consists of the personal information about a patient such as the patient's name, age, gender, race, ethnicity, birthplace residence, etc. This information individually identifies the cancer patient. Without individual identifiers to check for duplicate registrations, the data would be inaccurate and unsuitable for analysis.

Cancer information results from the diagnostic findings about a patient. It includes the primary site of the malignancy, its cell type, and the extent of disease. Dates and results of procedures used to diagnose cancer are also recorded.

Data collection continues after a patient is diagnosed with cancer. Information regarding cancer treatment are also recorded (surgery, radiation therapy, chemotherapy, hormone, immunotherapy, and other).

Cancer registries continue to gather data after the patient has received treatment. This consists of information concerning the treatment outcome. Patient status is updated regularly to maintain accurate surveillance information. Lifetime follow-up of patients permits registries to record survival information.

The cases can be reported to the cancer registry electronically or in traditional paper

format following nationally recognized reporting protocols to assure consistency in case reporting from facility to facility.

Cancer registries do not wait for information to be handed over from the sources mentioned above. Instead, registry staff becomes actively involved in case finding so that the information they receive is as complete as possible. Cancer Registries accomplish this by visiting hospitals and clinics to ensure that no cancer data or cases are missed.

Experience of PBCR Cachar District

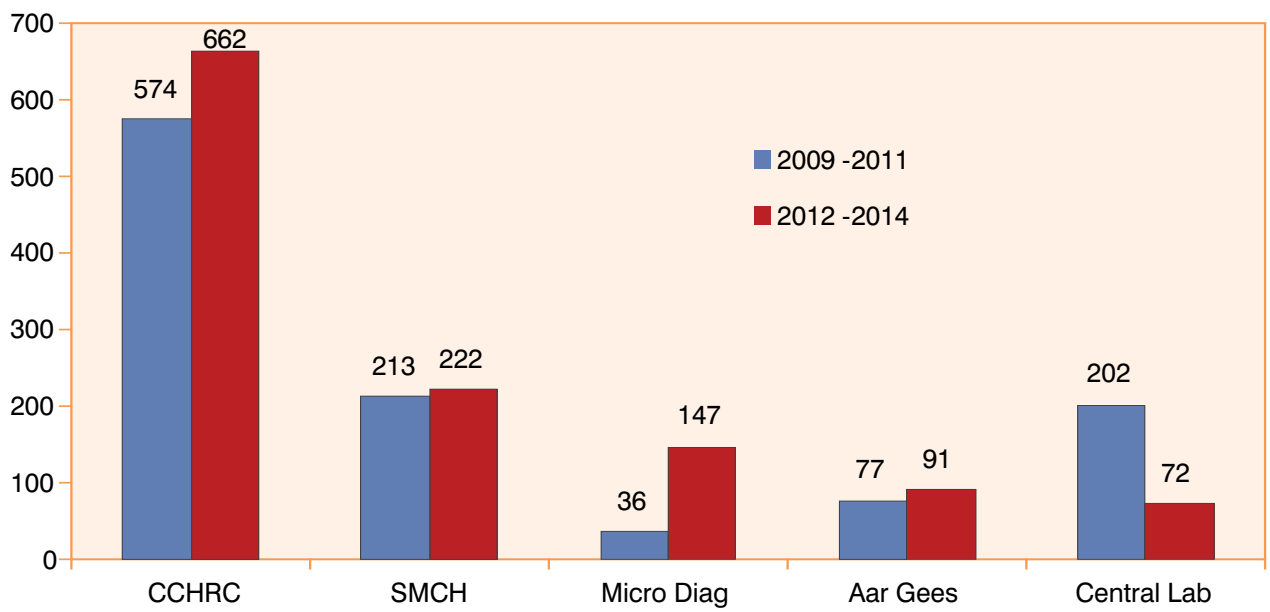
PBCR-Cachar district is one of the six old cancer registries of north east India. It has been expanded from PBCR-Silchar town to PBCR-Cachar district in 2007. Since then it has been collecting data on cancer cases in the district of Cachar in a systematic and scientific manner. The office of the PBCR is located in the Department of Pathology, Silchar Medical College. The sources of registration are visited by the Social Investigators on regular basis and data on cancer patients as per the core proforma is collected from the record of the sources. Data are collected from both the primary and secondary sources.

Primary source of data: Silchar Medical College and Hospital is the only primary source of data from where the data are collected from the patients by direct interview.

Secondary sources of data: Cachar Cancer Hospital, Diagnostic Centres, Private Laboratories, Private Practitioners etc. are the secondary sources of registration. Data collection from the secondary sources is by abstraction of records only.

Mortality data: Mortality data are collected from the Office of the Registrar, Birth and Death, Cachar District and Newspapers which are secondary sources. Mortality data are also collected from the primary sources like direct telephonic interviews and home visits.

Comparison of the average data received from the major sources of registration Cachar District (2009-2011 & 2012-2014)



Problems of data collection

1. Lack of motivation among the field staff for keeping data of cancer registry work.
2. Inadequacy in keeping proper records at the source giving rise to missing variables which hampers the quality of the data.
3. In order to maintain the patient's privacy (confidentiality), patients cannot be directly contacted in other institutions apart from Silchar Medical College and Hospital.
4. In cancer hospital setting ,, more time is required to collect majority of the variables as per the core proforma which hinders the real time data entry.
5. Lack of information given by the patients at the source of registration about the address of the patients creating problems for further follow up.

Initiatives by PBCR-Cachar District: To ensure the quality of cancer data, cancer registries may create and adopt their own innovative data collection systems. PBCR Cachar district is taking the following initiatives:

1. Comparison of the number of incidence cases per year at each source collected by the social investigators to find out the trends.
2. Regular meeting with the staff working at the different sources of registrations so that they can be motivated to keep records of the cancer patients.
3. Performance of the Social Investigators are checked on monthly basis so that the data collection goes on effectively.
4. Annual meeting is conducted with the head of the institutions of different sources so that problems of data collection can be minimised

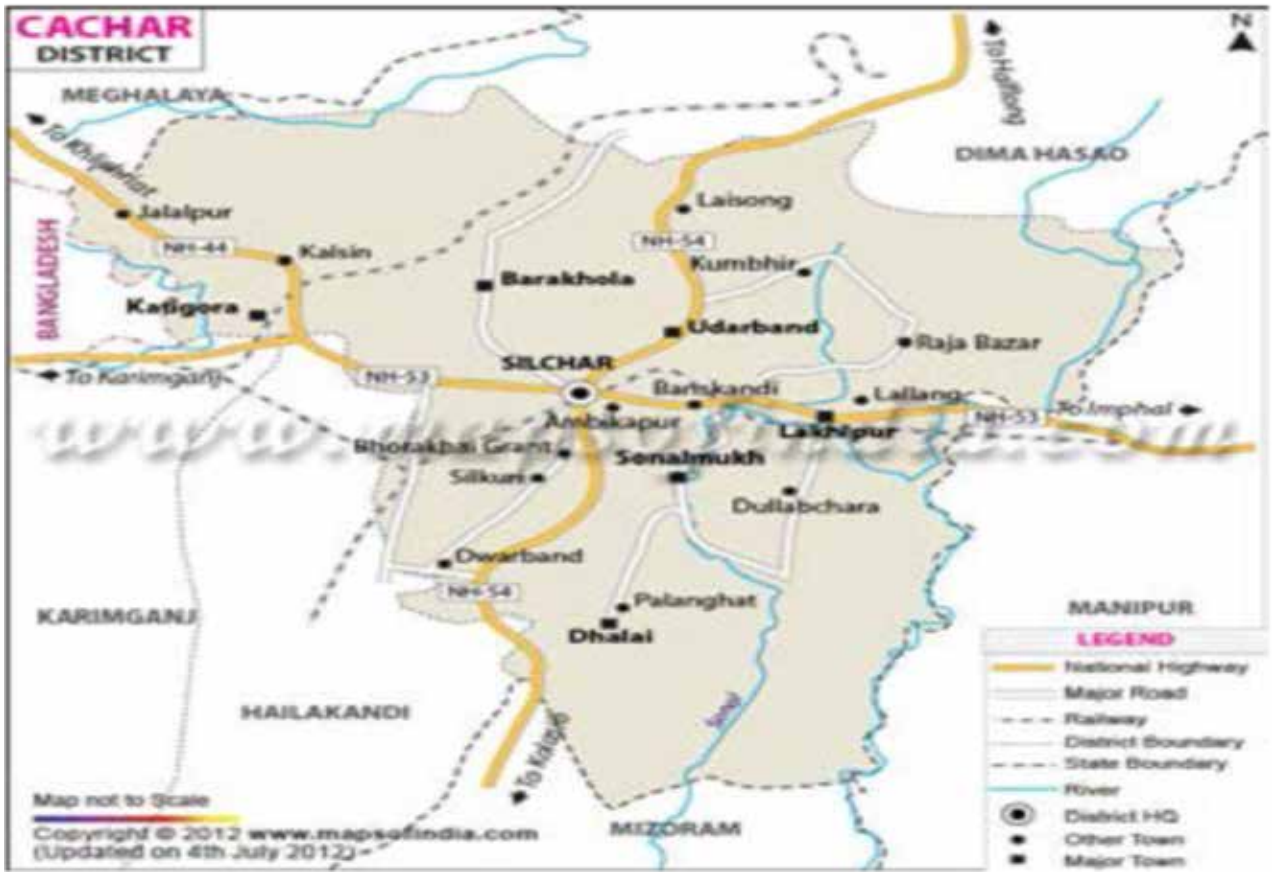
Conclusion: The cancer registry is an essential part of any rational programme of cancer control. Its data can be used in a wide variety of areas of cancer control ranging from etiological research, through primary and secondary prevention to health-care planning and patient care. Although most cancer registries are not obliged to do more than provide the basis for such uses of the data, they possess the potential for developing and supporting important research programmes making use of the information they collect. Cancer data collection is a time and labour intensive effort but the great value of its product, cancer statistics, makes all of the hard work worthwhile.

References:

1. Report of 27 PBCRs in India 2012-2014, NCDIR-NCRP(ICMR)
2. Report of CRAB, Volume XIX, Number 1, December 2014

Staff of PBCR Cachar – Dr. Shekhar Chakravarthi seated in the middle front row

A BRIEF INTRODUCTION ABOUT CACHAR DISTRICT



Cachar district is located in the southernmost part of Assam. It is bounded on the north by Barail and Jaintia Hills ranges, on the south by the State of Mizoram and on the west by the districts of Hailakandi and Karimganj. The total geographical area of the district is 3,786 Sq. Km. The Barak is the main river of the district and apart from that there are numerous small rivers which flow from Dima Hasao district, Manipur or Mizoram.

In 2011, Cachar had population of 1,736,617 of which male and female were 886,284 and 850,333 respectively. The male literacy of this district is 85.85% and female literacy is 74.62%.

The district is mostly made up of plains, but there are a number of hills spread across the district. Cachar receives an average annual rainfall of more than 3,000mm. The climate is Tropical wet with hot and wet summers and cool winters. The climatic condition of this district is significant for humidity and it is extremely beyond the limit.

Silchar, the district headquarter town, situated on the South bank of the Barak river is an important commercial centre of the state. Being a gateway to Mizoram, Manipur and Tripura, the town naturally plays a vital role so far supply of essential commodities etc to those states is concerned. A medical college, university, engineering college, station of All India Radio, TV Station and several other organizations has helped the town grow in importance.

Major occupations of the district

Agriculture: The economy of Cachar district is basically agrarian in nature with about 80percent of the population dependent on agriculture. Paddy is the major crop. Other important crops include oil seeds, pulses, cash crop like jute, vegetables etc. The agro climatic conditions of the district are conducive for various agricultural activities. Agriculture in the district is characterized by over dependence on rainfall, predominance of seasonal crops and traditional methods of cultivation. The gross cropped area in the district is 146219 hectares while the net sown area is 115489 hectares; the cropping intensity in the district is 126 percent. The district has a total of 2, 07,119 numbers of farm families and majority of who are landless and marginal farmers. Only about two percent of the net cropped area is covered by irrigation facilities.

Industry: The viable industries in the district based on local resources like cane, bamboo, pineapple & other agro based and fruit processing industries have potential for growth. The total industrial area in the district is spread across 38.68 acres of land. The major manufacturing units in the district comprise of food products and beverages and non metallic mineral products.

Livestock and Veterinary facility: The economy of the district is basically agrarian and as such the economic development of the district is highly dependable on agriculture and allied activities. Traditionally, dairy farming is a subsidiary occupation of the farmers of the district. Despite the large population of live stock, the milk production in the district is low mainly due to predominance of local cows with a poor genetic make-up. Though the district has conducive climatic condition for poultry farming, particularly commercial broilers, the activity has not made any significant progress.

Sericulture: The agro-climatic condition of the district is suitable for sericulture. The activity is specially practiced by the SC/ST families in the district. Since sericulture mainly involves women in rearing and spinning, it has great potential for creating employment opportunities for them. A total of 180 villages in the district are involved in sericulture activities. The silk and weaving industry of Assam is one of the traditional handicraft activities which has generated employment and provided livelihood opportunities to people in the district. It is the most important agro based cottage industry in the district in terms of employment and income generating activities.

Plantation and Horticulture: The major plantation sector in the district comprises of 143 numbers of tea gardens with a total area of 4075 hectares. The average yield of tea in the district is 1178 kg. per hectare and is the lowest among all the tea producing districts in the State. The district has favourable agro climatic conditions for the development of various horticulture crops. However, the horticulture & plantation crops are generally not grown on commercial scale in the district. The district has high potential for growth of citrus fruits, pineapple, areca nut, lemon, banana and coconut besides rubber and bamboo plantation.

Pisciculture: The river Barak, along with the tributaries, Jiri, Chiri, Madhura, Jatinga, Sonai, Katakhal and Chatla Haor are the major sources of fish in Cachar district.There are many type of water-bodies like Beels (natural water areas) and ponds throughout the district but there has been no concerted effort for pisciculture in a scientific manner. The demand for fish can not be met with the meager quantity produced in the District.

Others: Other occupations of this area are teaching, business, service in different sectors like medical, bank, university etc,

Food Habits: In Cachar district, majority of the population is Bengali. Besides the Bengali, there are Meihtei Manipuri, Bishnupriya Manipuri, Assamese, Hindi, Dimasa, a small percentage of Hmar and some other population are also residing in the district. So very interestingly the food habits of this heterogeneous population is also varied. There are vegetarian as well as nonvegeterian. Rice, vegetables, fish, egg, chicken, meat, dry fish, smoked meat are the main food materials of this area though smoked meat is popular only among some tribal groups. Tea is the main beverage of this district.

PBCR MIZORAM

P.I : Dr. Eric Zomawia, Dy Director (HME) & State Nodal Officer, NCD
Co. PI : Dr. John Zohmingthanga (Pathologist), Dr. Lalchhanhimi (Pathologist), Dr. Lalchhandama (Pathologist), Dr. Saia Chenkual (Surgeon), Dr. Jeremy L Pautu (Medical Oncologist), Dr. B Zothankima

Introduction:

Mizoram PBCR was started in 2003 at Pathology Department, Civil Hospital, Aizawl. Presently following are the Investigators & Staff.

Staff:
Dr. Freddie Lalhmangaiha Sailo
Medical Research Officer

Mr Ngursangzuala Sailo
Programmer

Mrs Annie Hmingthanmawii
Statistician

Ms Zothanpuii,
Social Investigators

Mrs C Zothantluangi,
Social Investigators

Mrs K Lalruatfeli
Social Investigators

Mr Lalngaihawma Khiangte
Data Entry Operator

Some of the achievements of Mizoram PBCR since 2003 till date:

1. Data of Mizoram PBCR has been included in 6 NCRP Reports.
2. Data of Mizoram PBCR was included in 'Cancer Incidence in Five Continents Vol.X', published by IARC, WHO in 2014.
3. 21 publications in Indian & International journals.
4. Associate member of IACR (International Association of Cancer Registries), Lyon, France.
5. Undertaken/undertaking xxx research projects under ICMR, DBT, IARC (WHO).
6. PI Trained in cancer epidemiology & registry under IARC, WHO at Trivandrum in 2003 (2 weeks) & at International Agency for Research on Cancer (IARC), WHO, Lyon, France in 2004 (3 weeks).
7. PI gave Oral presentation at Annual meeting of International Association of Cancer Registries at Sydney in 2008 & in other national conferences.
8. PI- became Fellow of UICC (Union for International Cancer Control); Life Member, UICC; Panel of International Referees for fellowships under UICC.
9. Cancer was made notifiable through administrative order.
10. As a result of Cancer Registry, directly or indirectly, Mizoram has seen a lot of progress in the field of cancer research –

- Establishment of Regional Cancer Centre at Civil Hospital, which later shifted to Zemabawk and renamed Mizoram State Cancer Institute (MSCI).
- MSCI is being upgraded to Tertiary Care Cancer Centre (TCCC) through NPCDCS Programme
- Establishment of Multidisciplinary Research Unit (MRU) under ICMR at State Referral Hospital, Falkawn.
- Workshop on Research Methodology was organized at Aizawl in collaboration with ICMR on 15th & 16th Feb 2016
- Through NPCDCS cancer screening & awareness is being started through NCD Clinics of various districts
- Anti Tobacco campaign is being carried out on a war footing

Brief summary of reports of Mizoram PBCR over the years:

1. **Male cancers all sites :** Since its inception in 2003, and in all 5 NCRP Reports published hence, Aizawl district has shown the highest incidence among all registry sites.
2. **Female cancers all sites: As in males,** Aizawl district has always shown the highest incidence, except for the latest NCRP Report wherein **Papumpare district** of Arunachal Pradesh (249/100,000/year), has surpassed **Aizawl district of Mizoram** (207.7/100,000/year).
3. **Stomach cancer, males & females:** Aizawl district and other districts of Mizoram have shown a very high incidence, comparable to Japan, Korea and China. It is the single most common cancer in Mizoram. However, it seems to show declining trend. The reason for this high incidence appears to be due to food habits – smoked meat, smoked fish, smoked vegetables, pickled food items like Sa-um (fermented pork). A case control study was conducted during 2001-2004 with ICMR, in which 329 stomach cancer cases and 658 non stomach cancer cases were included. The following associations were seen – OR (95% CI): Tuibur – 2.1 (1.3-3.1), Tobacco chewing 2.6 (1.1-4.2), Soda (alkali) – 2.9 (1.2-6.3), smoked meat – 2.6 (1.2-7.3), current smoker – 2.3 (1.4-8.4), smoked fish – 2.4 (1.1 – 9.2), Sa-um – 3.4 (1.7 – 10.3). *(Ref: 1. Tobacco Use and Stomach Cancer in Mizoram, India : Rup Kumar Phukan, Eric Zomawia, Kanwar Narain, Nakul Chandra Hazarika and Jagadish Mahanta, Cancer Epidemiology & Biomarkers Prevention, Vol. 14, 1892-1896, August 2005. 2. 'Dietary habits and stomach cancer in Mizoram, India': Rup Kumar Phukan, Konwar Narain, Eric Zomawia, Nakul Chandra Hazarika and Jagadish Mahanta, Journal of Gastroenterology, May 2006, 41,418-424).* However, it is showing a declining trend.
4. **Lung cancer, males & females:** Aizawl district and the whole of Mizoram has a consistently high incidence rate among Indian registries for many years. It has not shown any decline during these 14 years. Mizoram has been consistently the state with the highest prevalence of tobacco use among all the states of India. National Family Health Survey 2005-06 showed the following prevalence rate for Mizoram (All India average in parentheses) ; Male smoking – 73.6 % (32.7 %), Any tobacco Male – 83.4 % (57.0%), Female smoking – 16.1 % (1.4 %), Female any tobacco 60.8 % (10.8 %). In all these 4 categories, Mizoram topped all other Indian states. GATS India 2009-10 also shows Mizoram state topping all other states in prevalence of smoking (67 % current tobacco user).
5. **Esophagus cancer:** It shows a very high incidence after East Khasi Hills and Kamrup Urban district. It seems to be rising. The causes of high incidence are probably due to high consumption of tobacco, betel nut chewing and alcohol.
6. **Cervix cancer:** Aizawl district has been topping the incidence of cervix cancer and it is not showing any decline. The reason for this is not known.

Table 1: Trends of common male cancers of Mizoram State (AARs)

Site of cancer	2003-04	2005-06	2006-08	2009-11	2012-14
All sites, males	194.5	191.5	176.5	189.5	211.5
Stomach, males	50.6	47.7	42.9	47.6	41.1
Esophagus, males	19.7	20.5	20.6	26.0	32.6
Lungs, males	24.8	26.7	24.5	28.3	32.6

Table 2: Trends of common female cancers of Mizoram State (AARs)

Site of Cancer	2003-04	2005-06	2006-08	2009-10	2012-14
All sites, females	155.7	155.0	152.8	153.7	165.8
Cervix, females	19.8	17.4	17.7	17.1	23.1
Lungs, females	24.7	26.7	26.3	28.7	29.3
Stomach, females	23.2	25.7	20.5	22.7	20.2
Breast, females	16.7	14.1	15.1	16.4	10.9

Table 3: Trends of common male cancers - Aizawl district (AARs)

Site of Cancer	2003-04	2005-06	2006-08	2009-10	2012-14
All sites, males	277.2	269.0	249.5	273.4	270.7
Stomach, males	57.3	58.8	55.4	64.2	43.9
Esophagus, males	40.3	31.8	34.2	42.0	49.9
Lungs, males	39.3	42.5	36.0	45.7	37.7

Table 4: Trends of common female cancers of Aizawl District (AARs)

Site of Cancer	2003-04	2005-06	2006-08	2009-10	2012-14
All sites, females	231.5	208.4	210.0	227.8	207.7
Cervix, females	30.5	25.4	22.5	24.3	28.0
Lungs, females	42.1	34.7	38.7	44.6	40.8
Stomach, females	33.6	28.9	24.4	31.2	23.7
Breast, females	26.0	19.6	23.3	30.3	28.0

GUJARAT CANCER AND RESEARCH INSTITUTE, AHMEDABAD

PBCR – Ahmedabad Urban : PBCR – Ahmedabad Rural
Hospital Based Cancer Registry and Patterns of Care and Survival Studies on Cancer Breast, Cancer Cervix and Head and Neck Cancers (POCSS)
P.I : Dr. Rakesh K Vyas
Co. PI : Dr. Geeta Joshi, Dr. Janmesh Shah

PBCR – Ahmedabad Urban Agglomeration Area (NCRP–ICMR)

The Population Based Cancer Registry (PBCR) – Ahmedabad Urban Agglomeration Area started in 2007 under the network of National Cancer Registry Programme (NCRP), ICMR, Bengaluru which has evolved into a permanent centre of ICMR-National Centre for Disease Informatics and Research (NCDIR). The main objective is to assess the magnitude and types of cancers in Ahmedabad city and to estimate the cancer incidence in Ahmedabad urban area.

Area and Demographic Information

- Area : 299.71 km^2
- Location : Between Latitude – 20^0 00' and 23^0 04' North and Between Longitude – 71^0 06' and 72^0 09'
- Population : 42.20 lacs (2001 census)
- M : F Ratio : 885 females per 1000 males
- Population Density : 14080 per km^2

Cancer Care: Ahmedabad city is accelerating towards urbanization and modernization due to the fast growing economy of the city. Apart from The Gujarat Cancer and Research Institute (GCRI), the city has many private hospitals dedicated to comprehensive cancer care. They facilitate complete care including diagnostic, surgical, radiation and medical therapy under one roof.

Sources: Besides the base Institute i.e. GCRI, PBCR Ahmedabad Urban covers more than two hundred sources. There are 61 collaborating hospitals (Municipal hospitals, Government hospitals, corporate hospitals and Trust hospitals). The cancer information is also obtained from 25 pathology laboratories located in the city. The Birth & Death department of Ahmedabad Municipal Corporation is also one of the important sources of cancer cases.

Cancer Incidence and Mortality:

Incidence:

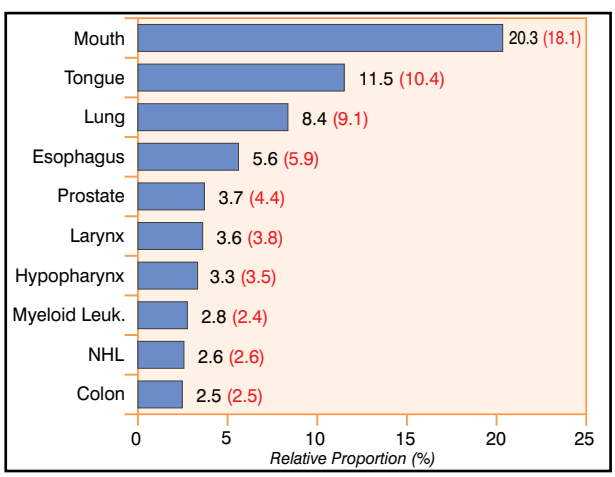
YEAR	MALE			FEMALE		
2012-2013	No.	CR	AAR	No.	CR	AAR
	5477	87.4	98.5	4117	73.0	76.5

Mortality:

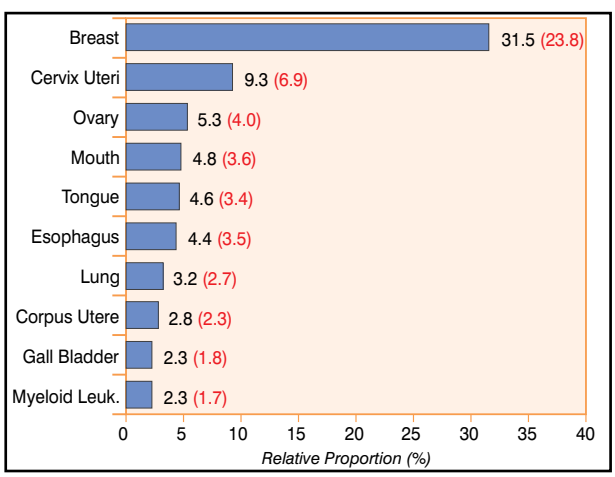
YEAR	MALE			FEMALE		
2012-2013	No.	CMR	AAMR	No.	CMR	AAMR
	1937	30.9	35.2	1141	20.2	21.4

Ten Leading sites in both sexes: Ten leading sites of cancer among males and females are shown below with their relative proportion (%) and AARs given in parentheses**.** Ahmedabad urban had highest AAR (18.1) in male mouth cancers among PBCRS across India.

Male



Female



Cumulative Risk: The risks to develop cancer in their life time in the age group of 0-64 years are 6.3% and 5.3% whereas in the age group 0-74 the risks are 10.8% and 8.5% respectively in men and women of Ahmedabad urban people.

RURAL CANCER REGISTRY – AHMEDABAD DISTRICT:
Area and Demographic Information

➢ Area	:	7677 km^2
➢ Location	:	North Latitude – 23.03
		East Latitude – 72.40
➢ Population	:	1.56 million (2001 census)
➢ M : F Ratio	:	892 females per 1000 males
➢ Population Density	:	733 per km^2
➢ No. of Talukas	:	10
➢ No. of Villages	:	548

*** The Ahmedabad city taluka highlighted with red color is excluded from Ahmedabad**

Rural Cancer Registry Area

The two major risk factors for cancer are tobacco (smoking or chewing) and alcohol. In Ahmedabad rural area, the tobacco habits are more prevalent and more than 60% of the cancers in males are tobacco related cancers. The proportion of tobacco related cancers in females is more than twenty percent in Ahmedabad rural area. It signifies the urgent need for tobacco control and other preventing measures in Ahmedabad rural area.

Cancer Care: A good health infrastructure set up by government (CHCs, PHCs etc.) is available within the district. A good number of private/trust hospitals and private practitioners are also present in all the towns and other places throughout the district. Proximity to the Ahmedabad city is also a big advantage as many private hospitals facilitate comprehensive cancer care including diagnostic, surgical, radiation and medical therapy under one roof.

Sources: Besides the base Institute i.e. GCRI, Rural Registry – Ahmedabad covers more than 275 sources. There are 61 collaborating hospitals (Municipal hospitals, Government hospitals, corporate hospitals and Trust hospitals). The cancer information is also obtained from 36 pathology laboratories located in the city. The vital statistics department, Ahmedabad Jilla Panchayat and the Birth & Death department of Ahmedabad Municipal Corporation are also the important sources of cancer cases for both cancer incident and mortality.

Hospital Based Cancer Registries (HBCRs) and Patterns of Care and Survival Studies on Cancer Breast, Cancer Cervix and Head and Neck Cancers (POCSS) at Regional Cancer Centre (The Gujarat Cancer & Research Institute)

The NCRP-NCDIR, ICMR, Bangalore has sanctioned this project in April 2014.

The broad objectives of the project is to assess quality of hospital care and cancer services in covered area and to describe length and quality of survival in relation to anatomical site, clinical stage and aspects of types of treatment and to undertake epidemiological research through short term case control studies.

The work for the year 2014 has been completed. Annexure tables are provided by NCDIR-NCRP, Bengaluru and report publication is in process.

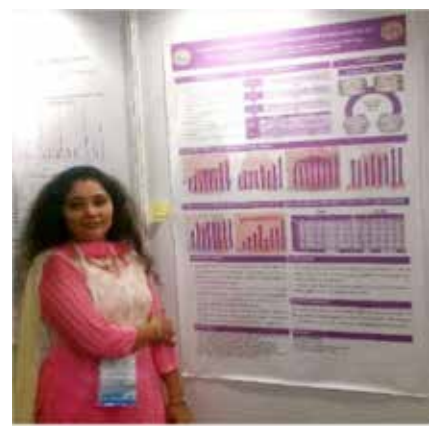
Government Resolution for reporting any diagnosed or suspicion of cancer cases to The Gujarat Cancer & Research Institute, Government order given elsewhere in this issue

Cancer Registry Staff (PBCR Ahmedabad Urban/Rural and HBCR)

Training/Workshop/Meeting participation and arrangement:

1. Organised 1st meeting of Medical Records, Technical and Allied staff of different sources of Ahmedabad Cancer Registry at Cama Hall, GCRI, Ahmedabad on 3rd September 2015.

2. Participation in 37th Annual IACR Conference held in Mumbai, 7th October to 10th October, 2015



The Internationally stipulated Death Registration (WHO):
To specify Immediate Cause & Underlying cause of death

INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF CAUSE OF DEATH

Cause of death		Approximate interval between onset and death
I Disease or condition directly leading to death*	(a)	.....
	due to (or as a consequence of)	
Antecedent causes Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last	(b)	.....
	due to (or as a consequence of)	
	(c)	.....
	due to (or as a consequence of)	
	(d)	.....
II Other significant conditions contributing to the death, but not related to the disease or condition causing it	.....	.....
	.....	.....

**This does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury, or complication that caused death.*

CANCER REGISTRY, CHENNAI

P.I : Dr. R. Swaminathan
Co. PI : Dr. R. Rama

Some states have taken the initiative for making cancer as a Notifiable disease. This would be of immense importance to functionalize PBCRs and for assessing the magnitude of the cancer problem and for cancer control activities in the community.

MEETING WITH THE HONOURABLE CHIEF MINISTER OF TAMIL NADU STATE BY THE OFFICE BEARERS OF THE CANCER INSTITUTE (W.I.A), CHENNAI

Dr. V. Shanta, Chairman, Cancer Institute (WIA), Chennai, led the team of office-bearers of the institute to meet the honourable Chief Minister of Tamil Nadu state, Dr. J. Jayalalithaa, on the appointed date of July 19, 2016. Besides the sake of courtesy, the main objectives of this meeting were to discuss the current activities undertaken on cancer control in the state and to present a charter for the increased utilization of the institute's expertise in this area by the government health agencies for their projects. The request for declaring cancer as a Notifiable disease by law through legislation found favour with the chief minister and she immediately directed the officials to act without delay. The Tamil Nadu Cancer Registry Project (TNCRP) undertaken by the institute proved to be the stepping stone.

The honourable Chief Minister of Tamil Nadu Dr. J. Jayalalitha with the delegation from Cancer Institute (WIA), Chennai, at her chamber in the secretariat.

A working group comprising members from state NHM and the institute is in the offing (i) to achieve an increased coverage of eligible women for cervix and breast cancer screening, (ii) to reduce the gaps in the follow up of screen positive women and (iii) to track referrals with pathologists / hospitals.

This group will also oversee the modus-operandi of integrating all the cancer screening activities undertaken by different stake-holders throughout the state into one common minimum electronic database (patient ID, demographic, screening status, follow up, outcome, etc.) for effective implementation and ultimate evaluation of the program under the auspices of Tamil Nadu Cancer Screening Project.

This will be helpful (i) to avoid repetitive screening of same individual, (ii) to get updated status on screening and outcomes from different databases, (iii) to correlate screening status with outcomes and (iv) to match with TNCRP data for evaluating cancer screening. This also includes sharing of line-list of cancer patients to TNCRP wherever feasible.

The novel approach of HPV vaccination of girls in the age-range 10-15 years also found acceptance with the health officials and work is on to accord permission to start the program. The concept of having nodal centres for screening programs in every district headquarters to streamline data collection, patient referrals and all follow up has gained momentum with the government seeking details of land area and other things required for this purpose.

The Cancer Institute (WIA) wholeheartedly thanks the honourable Chief Minister for her total commitment and support to the cause of cancer patients. In the coming years, there will be more action and results on effective cancer control in Tamil Nadu through multi-institutional (government and non-government) cooperation, participation and support.

Cancer Registry Activities:

IACR Mumbai, Best poster award to Mr. P. Sampath

- **Best paper award for registry staff:** During the 2015 IACR meeting held at Mumbai, Mr. P. Sampath, MMTR Statistician, Chennai PBCR won the best poster paper award for 'Cancer Unknown primary (CUP) – Trend and associated with registration practices in Chennai'.
- R. Swaminathan, PI, Chennai PBCR and HBCR, served as WHO consultant to ascertain cancer burden and advice on cancer control in Republic of Maldives in August-September 2015.
- R. Swaminathan, PI and R. Rama, Co-PI, Chennai HBCR and PBCR, were invited to/by International Agency for Research on Cancer (IARC), France, to serve as FACULTY for an international course on cancer survival with emphasis on low-and-middle income countries in June 2015.
- M.S. Kalyani, Data Manager (HBCR), was awarded ICRETT fellowship by International Union for Cancer Control (UICC), Geneva, to undergo training in IARC, France in June-July 2015.

Dr. S. Krishnamurthi Memorial Oration:
On September 17th, 2016 the Dr. S. Krishnamurthi Memorial Oration was delivered by Dr. R. Sankaranarayanan, Special Advisor (Cancer Control), IARC, France. The topic was '***What can we do further to reduce suffering from cancer'***, in which, he highlighted the important role of the cancer registries in any rational cancer control programme.

CANCER REGISTRATION IN INDIA – CHALLENGES AND OPPORTUNITIES

Ambakumar Nandakumar, MBBS, MD, MPH
National Cancer Registry Programme (NCRP), Bangalore, India

The Indian Council of Medical Research (ICMR) initiated a network of cancer registries across the country under the National Cancer Registry Programme (NCRP) in December 1981. Till 2001 there were six Population Based (PBCR) and five Hospital Based (HBCR) cancer registries. As of 2015 there are 29 PBCRs and 29 HBCRs, 17 centres collaborating in the Patterns of care and Survival Studies (POCSS) and several other centres participating in the cancer atlas projects and using the HBCR-DM software. The NCRP of the ICMR is now upgraded as a new permanent ICMR centre "National Centre for Disease Informatics and Research", in Bangalore.

Over the years, the NCRP has developed software to aid cancer research and development. The concept of using electronic information technology in gathering cancer data through the worldwide web was first done with the Cancer Atlas project which showed a remarkable degree of success. The results of this report gave the impetus for commencing the PBCRs in the North East. The model has also been extended for the POCSS on three sites of cancer, viz., cancer cervix, breast and head and neck cancers. Web-based data capture allows individual centres to track and get listing of patients who are on regular follow-up post treatment and those who are not. The software application has provision to provide listing of patients whose appointment is due with their telephone numbers and other details. Individual centres can generate a variety of tables on survival of their data.

There are interesting outputs in terms of clinical outcomes from the POCSS. Actual facts and figures on pattern of care in the Indian setting could see modifications in the ways Indian patients are given cancer directed treatment. Some key results include the survival benefit (of 18-20%) in patients who received concurrent chemo-radiation in locally advanced cervical cancer and cancers of the oro and hypo-pharynx, the low proportion (31%) of breast conserving surgery in early (Stage I and II) breast cancer. A SWOT analysis of the NCRP is also depicted.

The future of PBCRs in India lies in more and more sources of registration using the software and evolving HBCRs and POCSS in their own institutions / hospitals. Likewise electronic information technology should be exploited for improving the system of registration of death and obtaining the complete and correct certification of the cause of death. Cancer registries are central to any programme on cancer control and the registries' data is invaluable in giving indicators. Perhaps, no single country shows a wide variation in incidence and types of cancer as that observed in India. This epidemiological goldmine needs to be studied.agencies for their projects.

STUDIES REPORTED BY NCDIR & NCRP REGISTRIES

(i)PATTERNS OF CANCER CARE AND SURVIVAL STUDIES (POCSS) GROUP

Slno.	Name of the Institute	Cancer Breast	Cancer Cervix	Head and Neck Cancers
1.	*Tata Memorial Hospital (TMH), Mumbai*	R.A. Badwe; A. K. D'Cruz; B. Ganesh; Arshi Khan; SushamaSaoba; Sharwari Joshi; Mitali Sapkal;		
		VaniParmar; Sudeep Gupta; Ashwini Budrukkar; RakeshJalali;	S.K. Shrivastava; Rajendra Kerkar; Amita Maheshwari; Umesh Mahantshetty; Reena Engineer; Sudeep Gupta;	Prathamesh Pai; J. P. Agarwal; Sarbani Lashkar; RakeshJalali;
2.	*Cancer Institute (WIA), Chennai*	V. Shanta; R. Swaminathan; R. Rama; P. Shanthi; M.S. Kalyani.		
		V Sridevi;	G. Selvaluxmy;	A. Krishnamurthy;
3.	*Regional Cancer Centre, Thiruvananthapuram*	Paul Sebastian; Aleyamma Mathew; Preethi Sara George;		
		Ratheesan K; Beela Sarah Mathew.	Francis V. James; Aswin Kumar;	K Ramadas; CT Kainickal; Rejnish Kumar R.
4.	*Amrita Institute of Medical Sciences, Kochi*	D.K.Vijaykumar; P. Gangadharan.		
			M. Dinesh; Anupama Rajanbabu;	Krishnakumar Thankappan;
5.	*Assam Medical College, Dibrugarh*	K. Adhikari M; M.S. Ali; R. Akhtar; S.K. Bhuyan; I.Baruah;		
		Sheila Neog.		Sheila Neog.
6.	*Cachar Cancer Hospital and Research Centre, Silchar*	Ravi Kannan; Ritesh Tapkire; Gopal Dutta; Amit Das; Gayatree Roy		
7.	*Post Graduate Institute of Medical Education and Research, Chandigarh*	Sushmita Ghoshal; Suresh C. Sharma.		
			F.D.Patel.	
8.	*Mahavir Cancer Sansthan, Patna*	J.K.Singh; Manisha Singh; Preeti Jain; Anita Kumari		
9.	*Rajiv Gandhi Cancer Institute and Research Centre, New Delhi*	Sheh Rawat; Anjali K. Pahuja.		
		Anamika Mishra;		AtikaDogra;
10.	*Dr B. Borooah Cancer Institute, Regional Cancer Centre, Guwahati*	A.C. Kataki		
		Mouchumee Bhattacharyya	Debabrata Barmon	Ashok Kumar Das
11.	*Kidwai Memorial Institute of Oncology, Bangalore*	M.Vijayakumar; K. Ramachandra Reddy; C.Ramesh; D.J. Jayaram.		
12.	*Govt. Medical College & Hospital, Nagpur*	K. M. Kamble; V. N. Sagdeo; Niketan Jambhulkar.	Shuchita Mundle; Pushpalyengar	
13.	*Healthcare Global Bangalore Institute of Oncology, Bangalore*	Basavalinga S Ajaikumar; Kumaraswamy; Raghavendra Rao M; Mahesh Bandemegal;KrithikaMurugan; Nalini Rao; Ramesh S Bilimagga; Gopinath K S; RadheshyamNayak		
14.	*Govt. Medical College & Hospital, Jammu*			Dinesh Kumar; Ashutosh Gupta; Rahul Sharma.
15.	*ICMR Headquarters, New Delhi*	Dr. Soumya Swaminathan Dr. RS Dhaliwal; Dr.Tanvir Kaur.		

NCDIR

A. Nandakumar
F.S. Roselind
K.L. Sudarshan
K. Sathishkumar
D.D. Vijaykumar
A. Jain

RAP-CANCER

G.K. Rath
P.P. Bapsy
R.C. Mahajan
E. Vallikad
Kumaraswamy

A.C. Kataki P
P.C. Gupta
P. Gangadharan
R.N. Visweswara
M.N.Bandyopadhyay

(ii) PATTERNS OF CARE AND SURVIVAL DATA ANALYSIS OF THREE STUDIES

(A) Concurrent Chemoradiation For Cancer Of The Cervix: Results Of A Multi-Institutional Study From The Setting Of A Developing Country (India)

(Selected as one of the 10 best papers of 2015 by JGO)

Abstract from J Glob Oncol 2015; 1:11–22. JGO

Purpose: The primary output of hospital-based cancer registries is data on cancer stage and treatment-based survival that can be used to evaluate patient care, but because there are many challenges in obtaining follow-up details, a separate study on patterns of care and patterns of survival for patients at selected sites was initiated under the National Cancer Registry Programme of India. This article presents the results for cervical cancer.

Patients and Methods: A standardized patient information form was used to record patient information, and data were entered into a central repository—the National Centre for Disease Informatics and Research. The study patients were from 12 institutions and were diagnosed between January 1, 2006, and December 31, 2008. Patterns of treatment were assessed for 7,336 patients, and patterns of survival were determined for 2,669 patients from six institutions, at least 70% of whom had data regarding follow-up as of December 31, 2012.

Results: Of 7,336 patients, 55.5% received optimal radiotherapy (RT). In all, 80.9% of patients had locally advanced cancers (stage IIB to IVA), 51.1% received RT alone, and 44.4% received concurrent chemo radiation (RTCT). In 1,753 patients with locally advanced cancers, significantly better survival was observed with RTCT than with RT alone (5-year cumulative survival, 70.2% *v* 47.3%; hazard ratio, 0.48; 95% CI, 0.41 to 0.56).

Conclusion: A conservative estimate indicates that, on an annual basis, 38,771 patients with cervical cancers in India alone do not get the benefit of RTCT and thus they have poorer survival. There is a need to reiterate the National Cancer Institute's alert that advised supplementing chemotherapy to radiation for locally advanced cancer of the cervix in the context of the developing world, where 84.3% of cancers of the cervix occur.

(B) Survival In Head And Neck Cancers - Results Of A Multi-Institution Study

Abstract from APJCP.2016.17.4.1745

Background: The prime output of Hospital Based Cancer Registries is stage and treatment based survival to evaluate patient care, but because of challenges of obtaining follow-up details a separate study on Patterns of Care and Survival for selected sites was initiated under the National Cancer Registry Programme of India. The results of stage and treatment based survival for head and neck cancers by individual

organ sites are presented.

Materials and Methods: A standardized Patient Information Form recorded the details and entered on-line at www.hbccrindia.org to a central repository - National Centre for Disease Informatics and Research. Cases from 12 institutions diagnosed between 1 January 2006 and 31 December 2008 comprised the study subjects. The patterns of treatment were examined for 14053 and survival for 4773 patients from five institutions who reported at least 70% follow-up as of 31 December 2012.

Results: Surgical treatment with radiation for cancer tongue and mouth showed five year cumulative survival (FCS) of 67.5% and 60.4% respectively for locally advanced stage. Chemo-radiation compared to radiation alone showed better survival benefit of around 15% in both oro and hypo-pharyngeal cancers and their FCS was 40.0%; Hazard Ratio(HR):1.5;CI=1.2-1.9) and 38.7%; (HR):1.7; CI=1.3-2.2).

Conclusions: The awareness about the requirement of concurrent chemo-radiation in specifically cancers of the oro and hypopharynx has to be promoted in developing countries. The annual (2014) estimate number of new Head and Neck cancers with locally advanced disease in India is around 140,000 and 91,000 (65%) patients do not receive the benefit of optimal treatment with ensuing poorer survival.

(C) Decreased Survival With Mastectomy Vis-A-Vis Breast-Conserving Surgery In Stage Ii And Iii Breast Cancers: A Comparative Treatment Effectiveness Study

Abstract from - JGO in 12th October 2016 on-line release

Purpose: The primary purpose of hospital-based cancer registries is assessing patient care. Clinical stage–based survival and treatment-based survival are some of the key parameters for such assessment. Because of the challenges in obtaining follow-up parameters, a separate study on patterns of care and survival was undertaken by the Indian National Cancer Registry Program. The results for cancer of the female breast are presented here.

Patients and Methods: Data abstracted in a standardized patient information form were transmitted online to a central repository. Treatment patterns were assessed for 9,903 patients diagnosed between January 1, 2006, and December 31, 2008, from 13 institutions. Survival analysis was restricted to 7,609 patients from nine institutions wherein follow-up details (as of December 31, 2012) were available for at least 60% of patients.

Results: The overall 5-year survival rates with breast-conserving surgery (BCS) and mastectomy (MS) were 94.0% and 85.8%, respectively, for stage II disease (adjusted hazard ratio, 2.40; 95% CI, 1.8 to 3.2) and 87.1% and 69.0%, respectively, for stage III disease (hazard ratio, 2.82;95%CI, 2.2 to 3.7). Patients who had MS did better with systemic therapy (chemotherapy and/or hormone therapy), whereas patients with BCS required just local radiation therapy to achieve best survival.

Conclusion: This observational study in the natural setting of care of patients with cancer in India showed significantly decreased survival with MS when compared with BCS. The reasons for lower survival with MS and the biologic or scientific rationale of the necessity of systemic therapy to achieve optimal survival in patients undergoing MS but not in those with BCS need further investigation.

(iii) OTHER STUDIES FROM NCDIR

The NCDIR has conducted several scientific studies based on the data derived form the National Cancer Registry Programme. Two Studies based on reported information on cancer of breast cancer and retinoblastoma in children were published

The abstracts of these papers are presented below.

I. Time Trends in Breast Cancer Among Indian Women Population: An Analysis of Population Based Cancer Registry Data

Meesha Chaturvedi & K. Vaitheeswaran &

K. Satishkumar & Priyanka Das &

S. Stephen & A. Nandakumar

Indian J Surg Oncol (December 2015) 6(4):427–434
DOI 10.1007/s13193-015-0467-z

Abstract

Background: The trends observed in cancer breast among Indian women are an indication of effect of changing lifestyle in population. To draw an appropriate inference regarding the trends of a particular type of cancer in a country, it is imperative to glance at the reliable data collected by Population Based Cancer Registries over a period of time.

Objective: To give an insight of changing trends of breast cancer which have taken place over a period of time among women in Cancer Registries of India. Breast Cancer trends for invasive breast cancer in women in Indian Registries have varied during the selected period. Occurrence of breast cancers has also shown geographical variation in India.

Materials and Methods: This data was collected by means of a 'Standard Core Proforma' designed by NCRP conforming to the data fields as suggested by International norms. The Proforma was filled by trained Registry workers based on interview/ hospital medical records/ supplementing data by inputs from treating surgeons/radiation oncologists/involved physicians/pathologists. The contents of the Proforma are entered into specifically created software and transmitted electronically to the coordinating center at Bangalore. The registries contributing to more number of years of data are called as older registries, while other recently established registries are called newer registries.

Results While there has been an increase recorded in breast cancer in most of the registries, some of them have recorded an insignificant increase. Comparison of Age Adjusted Rates (AARs) among Indian Registries has been carried out after which trends observed in populations covered by Indian Registries are depicted. A variation in broad age groups of females and the proneness of females developing breast cancer over the period 1982 to 2010 has been shown. Comparisons of Indian registries with International counterparts have also been carried out. Conclusions There are marked changes in incidence rates of cancer breast which have occurred in respective registries in a developing country like India. A steady increase in AARs in most of the registries of India including the newly established registries is indicative of the fact that cancer breast poses a threat to women in India.

II. Paediatric Retinoblastoma in India: Evidence from the National Cancer Registry Programme

Sukanya Rangamani, Krishnan SathishKumar, N Manoharan, Pramod Kumar Julka, Goura Kishor Rath, Viswanathan Shanta, Rajaraman Swaminathan, Ranganathan Rama, Karabi Datta, Syamsundar Mandal, Shravani Koyande, Vinay Deshmane, B Ganesh, Shripad D Banavali, Rajendra A Badwe, C Ramesh, Lingappa Appaji, Ambakumar Nandakumar

Asian Pacific Journal of Cancer Prevention, Vol. 16, 2015; Page 4193-4198
(Reported in the last issue of CRAB – Vol 20, 2015)

(iv) PUBLICATIONS / STUDIES BY REGISTRIES

Introduction: A perusal of cancer incidence data reported by PBCRs of NCRP convinces us the important role of environmental factors, life style etc in the causation of many cancers. Epidemiological studies should be undertaken followed by etiologic studies. Differences among currently reported incidence of certain cancers in the country can lead us in this. The following observation highlight the need to focus on (a) High percentage of cases of thyroid cancer in Kerala women compared to that seen in men in Kerala and other parts of the country. More women than men get this cancer and more south Indian women get the disease than women in north. (b) The low stomach cancer rate in Gujarat compared to the high rate in Aizawl (c) The high rate of Gall Bladder Cancers seen in northern parts of the country compared to southern states (d) Gall Bladder Cancer is more common among women than in men. Similarly Lung cancer is more common or equally common in males and females in certain places. Eg., Sikkim.

(A) DATA QUALITY AND CONSISTENCY CHECKS AS QUALITY CONTROL MEASURES IN THE POPULATION BASED CANCER REGISTRY SETUP

Mrs. M.S. Arpita Sharma
Computer Programmer, PBCR-Guwahati

Introduction: The aim of population based cancer registries is to obtain information from all new cancer cases in a well defined population living in a geographic area to assess the magnitude of cancer burden and its evolution, and to provide a basis for research on cancer causes and outcome in terms of incidence, prevalence and survival. Therefore cancer registries contribute to monitoring the impact and effectiveness of policy implementation through monitoring outcomes. The reliability and utility of the information provided by cancer registries depends on the quality of the data collected. According to IARC Technical Report (Parkin et al., 1994) and (Parkin and Bray, 2009), there are four aspects of quality: 1) comparability, 2) completeness, 3) validity and 4) timeliness.

The use of information technology to gather the patient information enforces data standards, instant identification of errors and opportunities for immediate action to rectify the errors. Thereby data quality is ensured. The software technology has the ability to handle large data sets for scientific research including evolution of patient care. Cancer registries are permanent structures, and population-based cancer registration is a continuous process. Built-in quality control procedures are necessary to ensure the completeness and high quality of registry data maintained over time. “Intelligent” computer terminals for data entry perform a series of automatic checks to ensure that inconsistent data are not accepted (in these cases, the registry refers back the data source for clarification and correction).

Comparability: One of the primary functions of NCRP is to enable the comparison of cancer incidence rates across different population groups. Comparability of the statistics generated for populations requires the standardization of practices concerning classification, coding and consistency in definitions. NCRP follows the standards for classification and coding of cancer (ICD-O, published by WHO) which is used for coding. Determining the extent of the comparability of a cancer dataset requires consideration of the registry’s procedures, including the standards and definitions used in

registration. PBCRs under NCRP network focus on the following procedural aspects – Source – PBCR Procedure Manuals.

1. The definition of incidence – what constitutes a cancer case, the definition of date of incidence, and the rules for dealing with multiple primaries (i.e. for distinguishing new cases of primary cancer from extensions, recurrences, or metastases of existing cases);
2. The registration of incidence cases.
3. The system used for classifying and coding neoplasms. ICD-O-3 provides a standardized system for coding Topography, Morphology, Behavior, Grade, Basis of diagnosis etc

Completeness: The extent to which all of the incident cancers occurring in the population are included in the registry database is a very important aspect of data quality. The factors which are associated with the completeness of coverage are historical data (number of new cancer cases over time), proportion of cases microscopically confirmed (MV%), mortality to incidence (M:I%) ratio and death certificate method. It is the degree to which all diagnosed neoplasms within a registry's population are included in the registry database. The most important criteria for classification of cancer data are the primary site but medical investigations leading to correct diagnosis give us important information in epidemiological studies. The accuracy of a diagnosis is likely to be better if the diagnosis is based on histological examination by a pathologist.

Duplicate data is a significant problem in any cancer registry. Registry data are collected from different sources by our Social Investigators and since the patient migrates from one source to another for investigation and treatment, duplication of data occurs. Duplicate registration of the same case should be avoided through careful attention to record linkage during the registration process. However, check for duplicates within a dataset using various checks criteria, be assessed by the individual registries before submission.

Validity (or accuracy): Validity of cases depends on internal consistency checks methods, diagnostic criteria methods (histological verification and DCO cases), and missing information analyses (e.g. primary site unspecified, age unknown) and population estimation.

The proportion of cancers for which no information other than a death certificate mentioning cancer can be found – the DCO% – is another measure of validity, since the information on death certificates is generally less accurate than information obtained from clinical or pathology records. In India incomplete mortality registration occurs. Establishing acceptable and objective criteria for the DCO% has been a contentious issue in comparative studies. A low DCO% may simply reflect efficient trace back of cases initially missed by the normal case finding procedures. The DCO% is also influenced by local circumstances (including the availability and accuracy of death certificates) and the registry's ability to successfully link records. The proportion of cases with missing values is commonly evaluated include age, duration of stay, ethnicity, MV,sites, subsites, histology and disease stage. A high proportion of cases with missing values generally implies poor diagnostic precision (ie low MV% observed among O&U cases) or a failure to specify the site of the primary cancer in cases diagnosed on the basis of tissue obtained from a metastasis.

However there is 10% error in the estimation of the population at risk produces

and herby inaccuracy in the calculated incidence rate as a 10% error in enumeration of cases. Cancer registries are generally not responsible for population estimates, and must rely on official censuses, or inter census estimates provided by vital statistics departments or their equivalents. PBCRs under NCRP network use PBCRDM2.1 (offline) and online PBCR data entry software which helps to identify and rectify the quality check errors, perform duplicate checks, different level of consistency checks and matching before data submission. NCRP does a second level of checks on the data. This ensures faster finalization of the data.

Timeliness: Rapid reporting is often required from the cancer registries. However, for cancer registries, a trade-off must be recognized between data timeliness and the extent to which the data are complete. The timeliness depends on the rapidity with which the registry can collect, process, and report sufficiently complete and accurate data. Stability of incidence over time is required to check on the number of cases being registered each year. In the absence of marked changes in the population, this can quickly identify potential defects in case finding. Each PBCR should periodically check data on number of cases received verses the expected cases (based on previous year) from each major source. The mortality-to-incidence ratio (M:I) is an important indicator that is widely used to identify possible incompleteness. It is a comparison of the number of deaths, obtained from vital statistics dept, and the number of new cases of a specific cancer registered in the same time period. Timeliness does require, however, mortality data of good quality (accurate recording of cause of death), so that M:I is approximated by survival probability (5 years). The method cannot be used where there is no comprehensive death registration, or when the cause of death is missing or inaccurate.

Unlike incidence data, estimating cancer survival requires a high quality of follow-up information. This can be achieved if all-cause mortality data are available. In India vital registration systems are often absent, unreliable or unavailable to the registries and many registries in India depend on active follow-up methods. The indices for cancer survival data quality due to exclusion from analysis are frequency of DCO cases and frequency of cases excluded from the study due to lack of any follow-up (Swaminathan et al., 2011). In India, with poorly functioning routine health statistics data systems and unavailable mortality data, cancer survival estimates from PBCRs can sometimes provide the only insight into the status of cancer care in the country. All cancer registries, both within and outside the NCRP network in India put together have made enormous efforts to improve the coverage and the quality of data collected. They have contributed significantly to provide the information base for planning, implementing and monitoring cancer control inputs and in evaluating cancer control outcomes. The regular annual review meetings of the NCRP and frequent training and re training courses for the registry staff as well as the technical collaboration that many NCRP registries have with international partners such as IARC, WHO, IACR, CONCORD and their networks have substantially improved the completeness, validity and quality of data .

Key Observations: Comparisons of incidence and mortality rates of PBCR- Guwahati

Table 1: Comparisons of AARS between previous and present report – All Sites

Comparisons of Incidence Rates within registry						
Year	Male			Female		
	AAR	CR	TR	AAR	CR	TR
2006-2008	161.6	109.1	252.5	122.5	83.4	243.4
2009-2011	185.2	128.1	279.6	156.3	109.5	296.9
2012-2014	206.0	143.4	321.8	174.0	123.3	325.3
Comparisons of mortality Rates within registry						
2006-2008	38.6	25.1	58.6	19.7	12.6	39.0
2009-2011	57.3	37.2	79.0	32.6	20.9	53.9
2012-2014	70.0	47.2	101.8	41.2	27.0	71.5

Table 2: Year wise Incidence and mortality rates - 2012-2014

Incidence Rates 2012-2014						
Year	Male			Female		
	CR	ASR	TR	CR	ASR	TR
2012	131.7	190.2	310.6	115.3	161.0	297.3
2013	148.4	213.0	331.2	125.3	176.0	335.7
2014	149.6	214.0	323.1	128.8	183.3	341.0
Year wise Mortality Rates 2012-2014						
2012	41.0	61.3	83.5	26.5	38.8	73.1
2013	56.6	83.0	128.3	27.2	42.8	75.2
2014	43.9	65.5	93.3	27.0	41.6	66.0

Table 3: Proportion of MV, DCOs, M:I ratios based on consolidated reports

Year	Total		
Percentage (%)	MV	DCOs	MI
2006-2008	74.9	12.0	19.8
2009-2011	80.3	7.8	24.8
2012-2014	82.0	9.0	28.1

Acknowledgement: I would like to offer my sincere thanks to

1. Dr. A.C. Kataki, Director, Dr. B. Borooah Cancer Institute,
2. Dr. J.D. Sharma, Principal Investigator,
3. Dr. A Nandakumar, former Director-Incharge, NCDIR
4. Dr. Prashant Mathur, Director, NCDIR
5. All staff of PBCR-Guwahati
6. All Sources of Registration of Kamrup Urban District

References:

1. IARC Technical Report (Parkin et al., 1994) and (Parkin and Bray, 2009).
2. Cancer Incidence in five continents, Vol-X, IARC, Edited by D. Forman, F. Bray, et al 2014.
3. International Classification of Diseases for Oncology, 3rd edition. Geneva: World Health Organization, Geneva. Fritz A, Percy C et al, 2000.
4. Cancer survival in Africa, Asia, the Caribbean and Central America: database and attributes, Swaminathan et al., 2011
5. National Cancer Registry Programme, Three year report of Population Based Cancer registries: 2012-2014 (ICMR).

PATIENT INTERVIEWS BY HBCR & PBCR STAFF

PBCR & HBCR REVIEW MEETINGS HELD BY DR.A.C.KATAKI, DIRECTOR BBCI.

(B) Scenario Of Gynaecological Cancers In Kamrup Urban District: A Brief Report

Dr. Debanjana Barman, Medical Research Officer, PBCR-Guwahati, Dr. B.Borooah Cancer Institute

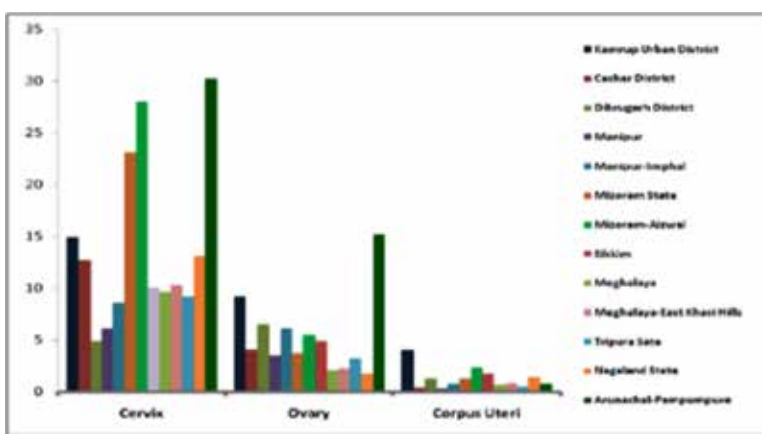
Health issues in women are of great importance in a society and have attained high concern as they form the sheet anchor for the upkeep and integrity of the family and society. With limited access to education or employment, high illiteracy rates and increasing poverty levels health improvements for women are quite difficult. The comprehensive global cancer statistics from the International Agency for Research on Cancer (IARC) indicate that gynaecological cancers accounted for 20% of the 14.1 million estimated new cancer cases, 8.2 million cancer deaths among women in the world in 2012.The estimation of cancer burden is necessary to set up priorities for disease control. Cancers of the female reproductive system - cervix, corpus uteri, ovary, vulva, vagina, fallopian tube and choriocarcinoma are important causes of cancer morbidity and mortality among women worldwide. Gynaecological cancers have increased in India and are estimated to be around 182,602 by the year 2020 constituting about 30% of the total cancers among women in India[1]. Among these, cancer of the uterine cervix followed by ovary and corpus uteri is the major contributors. Several lifestyle factors are known to play a major role in the etiology of these cancers. Age is an important factor for e.g. ovarian cancer is not uncommon in younger women (<40 years) however risk increases with age. Socio-economic factors like low literacy amongst females, cultural beliefs and traditions in different ethnic groups etc, are some of the factors resulting in delay in diagnosis and treatment of cancers in female[2].

Epidemiology of female cancer in Kamrup urban district(KUD) for the year 2010-2014 shows

that out of the total number of 8561cancer cases ,3767werefemales(44%).Incaseofgynaecological cancers a total of 661 cases of cervical, ovarian and corpus uterine cancers were registered out of the total 3767 female cancer cases(17.5%) for the year 2010-2014[3]. In Fig.1 the Age specific rates of cervical, ovarian and uterine cancers (2010-2014) are shown. It is seen that with age the rates increase. It reaches peak at the age group 60-64 years. For ovarian and corpus uterine tumours also, there is a rise in rates with age. Fig.2 represents the Age Adjusted Rate (AAR) of cancers of the cervix, ovary and corpus uteri in the Northeastern registries in India. In case of cervical cancer, Papumpare district of Arunachal Pradesh has the highest AAR followed by Aizwal. Kamrup Urban District is in 4th position after Mizoram. In case of ovarian cancers, KUD records the 2nd highest AAR after Papumpare district. KUD has highest AAR in cancer of the corpus uteri among the other northeastern PBCRs. More than 70% of the **cervical** cancer cases occurred in developing countries (World Cancer Report-2014)[4].Risk factors includes multiple sexual partners, poor sexual hygiene, repeated child birth etc. Infection with Human Papilloma Virus (HPV) is now considered a prerequisite for the development of cervical cancer. Improvement in the living standard of women results in reduction in the incidence of cervical cancer. Regular cervical cytology examination (Pap smear) by all women can prevent the occurrence of this cancer.

Fig. 1. Age Specific incidence rates of cervical, ovarian and uterine cancer in KUD.

Fig:2- Age Adjusted Rate of Cancer of cervix, ovary and corpus uteri in NE India.



Source – 3 year report of PBCR – 2012-14, NCRP ICMR

Improvement of female education can contribute to increase the proportion of early stage diagnosis .In case of **ovarian** cancers several factors, including genetic, reproductive, hormonal and behavioral factors have been suggested to increase the risk. Genetic factors perhaps have the strongest and most consistent association with increased risk for ovarian cancer. Estrogen intake increases the risk of **endometrial** cancer.

Women with early onset of menarche are at a higher risk for Breast Cancer, late onset of menopause and childless women are at a higher risk. Breast cancer also increases the risk of developing cancer of the uterine corpus. Physical activity, taking oral contraceptives, a soy-rich diet reduces the risk. The prognosis for cervical cancer and for cancer of the corpus uteri have improved as increasing numbers of tumours are diagnosed at early stages, while ovarian cancer has a poor prognosis. The rising trend is due to the increase in the elderly women population and improved life expectancy. Efforts should be made to detect gynecological cancers at an early stage by creating awareness on risk factors and symptoms. Based on these facts, our activities in control of these cancers have been streamlined and with Dr. B. Borooah Cancer Institute, the single major source of cancer registration in Kamrup Urban District (KUD) the following methodology has been adopted. Several activities organized in Dr. B. Borooah Cancer Institute were aimed to reach out to the community. Awareness programme towards cancer risk reduction, prevention, early detection are done through audiovisuals, interactive sessions and cancer screening programme for cervical cancer with Pap smear cytological examination. With support from Directorate of Health Services, Govt of Assam and Rani CHC Dr BBCI has adopted Rani CHC in KUD for improving access to early diagnosis of cancer through screening. Several health workers are sensitized for mobilizing population at risk for the screening programme.

References:

Ramnath Takiar*, Deenu Nadayil, A Nandakumar. Projections of number of cancer cases in India (2010-2020) by cancer groups. Asian Pac J Cancer Prev. 2010; 11 (4):1045-9.

Waldmann A, Eisemann N, Katalinic A. Epidemiology of Malignant Cervical, Corpus Uteri and Ovarian Tumours - Current Data and Epidemiological Trends. Geburtshilfe Frauenheilkd 2013;73 (2):123-129.

Three –year report of Population based Cancer Registries: 2012-2014 National Cancer Registry Programme. Indian Council of Medical Research.

Stewart BW, Wild CP, editors (2014). World Cancer Report 2014. Lyon, France: International Agency for Research on Cancer.

Acknowledgements:

1. Dr. A.C .Kataki , Director, BBCI
2. Dr. J.D. Sharma, PI (PBCR&HBCR-NCRP-ICMR)
3. Dr. Debabrata Barmon, Assoc Prof .Gynaeoncology, BBCI
4. Dr. A. Nandakumar former Director-in charge, NCDIR
5. Dr. Prashant Mathur, Director , NCDIR
6. All staffs of PBCR- Guwahati
7. Various sources of registration in Kamrup Urban District

(C) Gall Bladder Cancer In India

Three studies from NCRP registries are reviewed here.

The CIN Vol. 10 has reported the highest gall bladder cancer incidence in Chile Valdivia – ASR female 25.1. The NCRP report indicates the highest gall bladder incidence rate was from Kamrup Urban district ASR male 8.8 and female 17.1. Two studies reported and published are

I. Epidemiology of Gall Bladder Cancer among North Eastern States of India – A review by Amit Das, Epidemiologist, Department of Epidemiology and Tumour Registry & HBCR, Cachar Cancer Hospital and Research Centre, Assam, India.

International Research Journal of Medical Sciences Vol. 4 (6); 11-15; June 2016

Abstract: World wide Gall Bladder Cancer (GBC) is a rare neoplasm. The survival rate is poor because of late diagnosis. The incidence is high among Indian north eastern states. Systematic search done for review and accepted 24 articles and two reports which were published in PubMed, Goggle's scholar, MEDIND and other sources. Four major risk factors found for developing GBC i.e., Patient's demography, Gall Bladder abnormality, patient's exposure and infection. Studies found that over 70-88% GBC reported history of gall stones. GBC hits north eastern India especially females after Chile Valdivia. National PBCR shows that females of Assam represents highest AAR which are noticed in Kamrup Urban District (14.0) followed by Cachar District (10.1), internationally second and third place and nationally first and second.

Discussion: the highest incidence found in Assam north east India mainly occupies by the rivers and having different ethnicity life style tobacco habits etc. A study from Cachar district north east India shows 86.7% women used tobacco those have GBC. Average age of male and female were 54 and 50 years and 71.9% diagnosed in advanced stage. Need more emphasis on epidemiologic study, cancer control programme and early detection of cancer.

II. Gall Bladder Cancer in PBCR Dibrugarh: An Observational Study during the period (2004-2013)

Dr. P. Saikia,
S. K. Bhuyan, C. Hazarika

Cancer is the second most common disease in India responsible for maximum mortality with about 0.3 million deaths per year. Carcinoma gall bladder is a very aggressive disease with poor outcomes. The prevalence of Gall Bladder Cancer, the commonest biliary malignancy, shows geographical and racial variations. It is rare in the western world, including the USA, UK, Canada, Australia and New Zealand, where the incidence rates range between 0.4 and 0.8 in men and between 0.6 and 1.4 in women per 100 000 population. However, high incidence rates, up to 2–4 in men and up to 4–6 in women, have been reported from various countries in central and south America, central and eastern Europe, and Japan. In Chile, GBC is the leading cause of death from cancer among women. It has been reported that during 2008, the cases of gallbladder cancer at the global level were 145,662 with an age-standardized rate (ASR) of 2.0 per 105 person years. Gall Bladder Cancer is the most common abdominal malignancy in the northern part of India. Recent trend shows that it is becoming more prevalent in N.E India (Table 1). Women are more commonly affected than men. The peak incidence occurs in people in their 60s. Carcinoma Gall Bladder, a disease of old age, is now found in the younger age group and presents with greater ferocity.

The PBCR covering the district of Dibrugarh situated in the eastern corner of the state of Assam was initiated as a part of North-East Regional Cancer Registries (NERCR) by NCRP of ICMR in 2003. Dibrugarh covering an area of 3381sq. kms is predominantly rural district comprising 81.6% rural and 18.4% urban population. There are 7 towns and 1348 villages in the district. According to 2011 census there are 6,76,434 males and 6,49,901 females with Male: Female = 961 / 1000.

During the period 2004-2013, in Dibrugarh district gallbladder cancer (male and female combined) consists of 6.03 % of total incidence. The individual proportions are 3.22% of all male and 9.7% of all female cases respectively during the period. Year-wise break up shows gradual increasing trend in both male and female. Gallbladder cancer has been found to be one of the ten leading sites of cancer since the year 2004 among both males and females. Among females breast has been the most common site of cancer in the individual years followed by oesophagus in the earlier years 2004 through 2010. However, from 2011 onwards gall bladder became the second leading site of cancer among females followed by oesophagus, ovary, cervix uteri, stomach and mouth. In the year 2013 it constituted 10.8% of all female cases. Among males Gall Bladder Cancer is gradually moving upwards in rank. It occupied the 8th position in 2013 (3.9%) in comparison to 10th position in 2004 (2.1%). Year-wise break up of AARs in both male and female shows a gradually increasing trend (Table 2) since 2004.

In the recently published three year report of Population Based Cancer Registries (2012-2014), 'Report of 27 PBCRs in India' by NCRP (ICMR) shows a clear picture of prevalence of Gall Bladder Cancer in N.E Region. From the report it was interesting to find the three registries of Assam among the top five ranks with respect to AAR of Gall Bladder Cancer incidence in both males and females during the period. Among males Gall Bladder Cancer in Kamrup Urban district showed the highest AAR (8.8) followed by Delhi (5.3), Cachar district (5.2) and Dibrugarh (4.1). Among females Kamrup Urban district showed the highest AAR (17.1) followed by Delhi

(11.8), Cachar district (10.2), Papumpare District (10.2) and Dibrugarh (8.6).

Table 1: Comparison of Age Adjusted Incidence Rates (AARs) of Gall Bladder Cancer of all PBCRs (2012-2014)

Male	AAR
Kamrup Urban District	8.8
Delhi	5.3
Cachar District	5.2
Dibrugarh District	4.1
Kolkata	3.3
Imphal West District	2.8
Tripura State	2.6
Bhopal	2.6
Nagaland	2.4
Aizwal District	2.4
Mumbai	2.2
East Khasi Hills District	2.2
Sikkim State	2.2
Chennai	1.8
Mizoram state	1.8
Naharlagun	1.7
Manipur State	1.7
Meghalaya	1.7
Ahmedabad Urban	1.4
Kollam District	1.4
Patiala Dist	1.4
Manipur State Excluding Imphal West	1.4
Nagpur	1.3
Mizoram State Excluding Aizwal	1.3
Thi'puramDist	1.2
Bangalore	1.2
WardhaDist	1.2
Pune	1.1

Female	AAR
Kamrup Urban District	17.1
Delhi	11.8
Cachar District	10.2
PapumpareDist	10.2
Dibrugarh District	8.6
Kolkata	7.7
East Khasi Hills District	7.1
Sikkim State	6.7
Imphal West District	6.6
Bhopal	6.4
Aizwal District	5.8
Tripura State	5.3
Meghalaya	5.0
Mumbai	4.1
Manipur State	3.8
Mizoram state	3.6
Naharlagun	3.4
Patiala Dist	3.2
Manipur state Excluding Imphal West	3.0
Mizoram state excluding Aizwal	2.1
Bangalore	2.0
Nagaland	1.9
Ahmedabad Urban	1.8
Naharlagun excluding Papumpare	1.8
Chennai	1.5
Nagpur	1.4
Pune	1.3
Thi'puram district	1.1
Kollam district	1.0
Wardha district	0.7

Trends over time for Gall Bladder Cancers of Dibrugarh district for the period 2004-2013

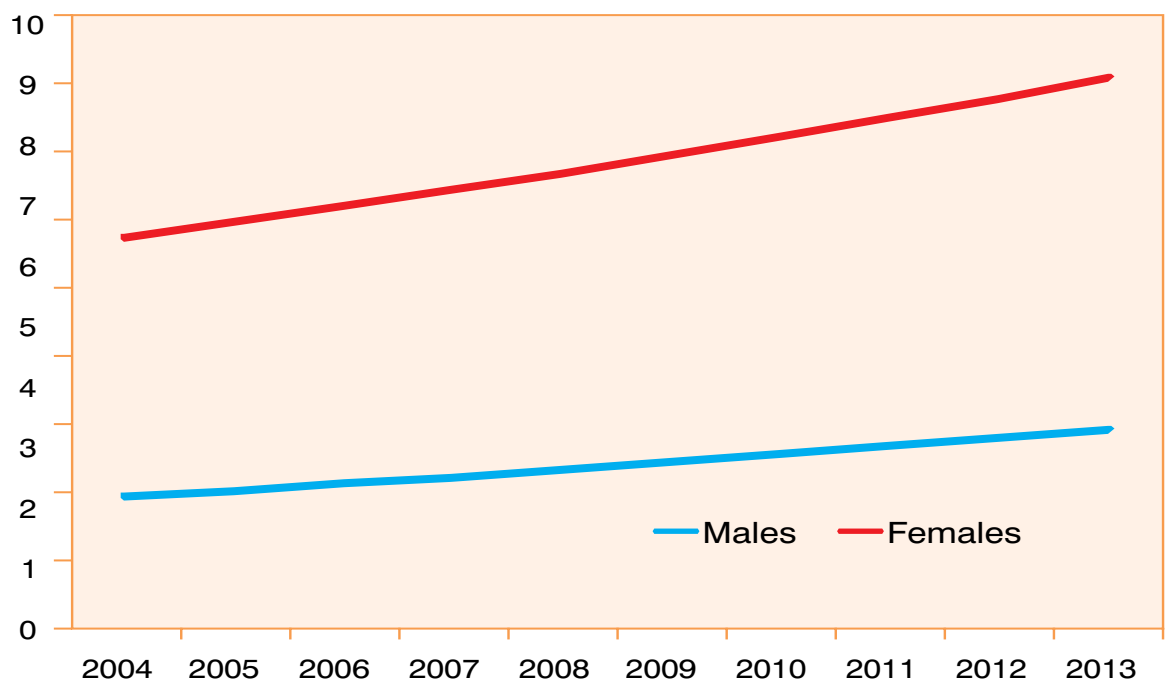
The time trend indicates a statistically significant increase in AARs for Gall Bladder Cancers among males and females of the district with an APC of 4.63% and 3.87% respectively over the period 2004-2013 (Table 3, Fig 1).

Table 2: Trends over Time in AARs

Year	Male	Female
2004	2.1	6.6
2005	2.2	6
2006	2.5	7.5
2007	2.1	7.3
2008	3	8.3
2009	3.1	6.5
2010	2.3	7.9
2011	3.7	7
2012	2.4	9.8
2013	3.5	9.4
Slope (b)	0.125	0.299
P - value	0.045	0.017
3 year MA Slope (b)	0.124	0.225
P -value	0.0004	0.012

Table 3: Trends over time based on Value of Joinpoint AARs with annual Percent Change (APC)

Year	Male	Female
	JP0	JP0
2004	2.15	6.36
2005	2.25	6.6
2006	2.35	6.86
2007	2.46	7.12
2008	2.58	7.4
2009	2.7	7.69
2010	2.82	7.98
2011	2.95	8.29
2012	3.09	8.61
2013	3.23	8.95
APC0	4.63*	3.87*
APC1		
APC2		



A recent study conducted over a period from June 2014 to May 2015 in the Department of pathology, Assam Medical College & Hospital, Dibrugarh. During the study period 302 gall bladder specimens received in the histopathology section. Out of these, 33 cases were diagnosed as malignant gall bladder lesion, among which 29 cases of primary gallbladder carcinoma, 3 cases of metastatic adenocarcinoma and 1 neuroendocrine tumour were detected.

From the study the following observations were made:

1. The age of the patients ranged from 21 to 80 years. Majority of the cases were in the 4^{th}, 5^{th}& 6^{th} decades. A significant proportion (24.1%) of the cases was seen in the 4^{th} decade and all were females.

2. The numbers of the female patients were more than male patients with the female to male ratio being 3.8:1 approximately.

3. The commonest factor implicated in the gall bladder carcinogenesis is gallstones. In this study among 29 cases of primary gall bladder carcinoma, gallstones were found in 26 cases (89.7%).

4. Diffuse thickening of gall bladder wall (37.93%) was seen as most common type presenting lesion in gross examination.

5. Adenocarcinoma NOS constituted majority of the cases, comprising 55.2% cases, followed by intracystic papillary neoplasms with invasive adenocarcinoma component (previously denoted as papillary adenocarcinoma of gallbladder) 34.48% as second commonest type of carcinoma.

6. Immunohistochemistry for HER2/ neu staining were done in 8 cases, out of which 3 cases showed strong positivity (3+) while 1 case showed (2+) strength of antigen expression. So, overall 50% cases showed positive immuno reaction for HER 2 /neu in this study.

Comparative analytical epidemiological studies are required to find the leads to high incidence of Gall Bladder Cancer particularly among females in Dibrugarh district owing to the significant increase since 2004.

References:

1. Ghosh Y*, Thakurdas B. Carcinoma Gall Bladder: Past, Present, and Future. International Journal of BioMedicine 4(4) (2014) 198-203.

2. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008 v2.0, Cancer Incidence and Mortality Worldwide. Lyon, France: International Agency for Research on Cancer; 2010. IARC Cancer Base No 10.

3. Singh M K, Chetri K, Pandey U B, Mittal B, Kapoor VK, Choudhuri G. Multinational spectrum of K-RASs oncogene among Indian patients with gall bladder cancer. J GastroenterolHepatol 2004; 19:916-2.

4. Boyle, P. and Parkin, D.M. Stastical Methods for Registries- Ch. In cancer registration-Principles and methods, Eds. Jensen,O.M, Parkin D.M, Maclennan R, Muir C.S and Skeet R.G, IARC Scientific Publications, No. 95, Lyon 1991.

5. Kim H.J, Fay M.P, Feuer E.J, Midthune D.N,-Permutaion tests for joinpoint regression wit application to cancer rates. Stat Med 2000, 19: 335-51 (correction: 2001; 20: 655).

6. Yeole BB,- Time trend studies with emphasis on cancer, NCRP Newsletter, Cancer Registry Abstract, Vol XII, 2005.

7. Saikia P, Dutta U- Clinicopathological evaluation of gallbladder carcinoma with special emphasis on incidentally detected cases- A hospital based study. (2016)

8. Three Year Report of Population Based Cancer Registries: 2012-2014, Report of 27 PBCRs in India (ICMR).

III. Profiles Of Gall Bladder Cancer Reported In The Hospital Cancer Registry Of A Regional Cancer Centre In The North-East India. Int J Res Med Sci 2014;2:1683-86.

Srabana Misra Bhagabaty, Jagannath Dev Sharma, Manigreeva Krishnatreya, Pintu Nandy, Amal Chandra Kataki

Background: The incidence of gall bladder cancer (GBC) is very high in this part of the world and there is little information on the descriptive epidemiology of GBC from our population.

Methods: A retrospective study on the data set of hospital cancer registry was analyzed. The data set consisted of patient information registered during the period of January 2011 to December 2012. The cases included for the present study were histologically confirmed and radiologically diagnosed cases of GBC. All the cases were retrospectively analyzed for gender, age, urban-rural residences, religion of patients and their educational levels. Descriptive statistics was calculated and Chi square test was done to see the significance differences among categories.

Results: A total of 837 cases of GBC were registered, F:M was 2.33, median age in females and males was 54 and 50 years respectively, majority of cases in both the genders were seen in 50-59 years of age, 81.1% patients were from rural areas and 18.8% from urban areas, Chi square on comparison with other cancers showed $p<0.05$, and there was no major religious and educational pattern of GBC seen in our population.

Conclusion: In our population females are at high risk especially past 40 years of age and rural population with its varied environmental, lifestyles and infective agents should be investigated for possible risk factor in the causation of GBC.

(D) Radiotherapy And Concurrent Chemo - Radio Therapy In Locally Advanced Hypopharyngeal Cancers - A Hospital Registry Based Analysis. Asian Pac J Cancer Prev 2015; 16: 4723-6

Sharma JD , Krishnatreya M , Das AK , Bhattacharyya M , Hazarika M , Kataki AC , Baishya N , Nandy P.

Abstract

The survival of patients with hypopharyngeal cancer is low amongst head and neck cancer cases. The incidence rates of hypopharyngeal cancers in our population are amongst the highest in the world and there are limited data available on the literature on varied responses to first course of treatment with radiotherapy (RT) and concurrent chemo-radiotherapy (CRT) in our population. Clinical characteristics and initial responses to treatment in patients who had received radiotherapy and chemo-radiotherapy in a regional cancer center from January 2010 to December 2013 were evaluated. The data were obtained from the hospital cancer registry, and analysis was carried using descriptive statistics.

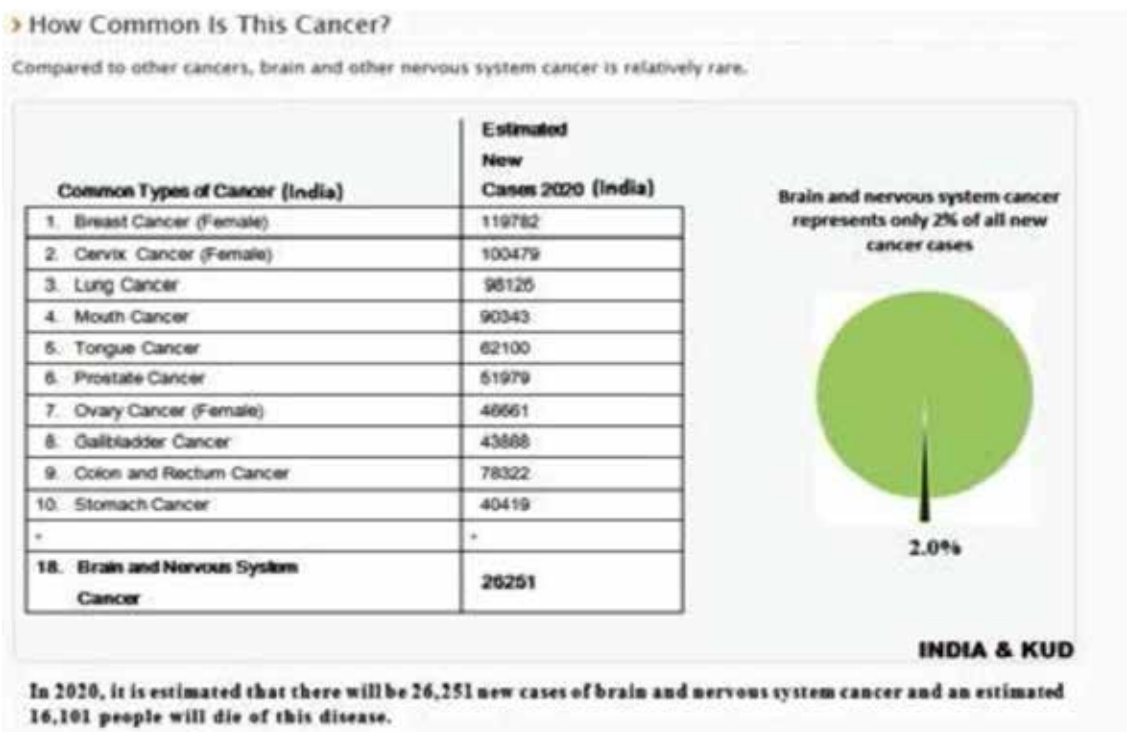
Pearson's chi-square was used to test for differences in the variables and $p<0.05$ was considered statistically significant. A total of

554 patients were included in the analysis, 411 (74.2%) receiving RT and 143 (25.8%) being given CRT. There was significantly lower number of patients above 70 years with a higher proportion of patients below 50 years who had received CRT ($p<0.05$). Some 79.3% and 84.6% of patients in the RT and CRT groups respectively presented with a favorable performance status, and in the RT group 240 (58.4%) showed complete response (CR), and in the CRT group 103 (72.0%) showed CR at the first follow-up ($p<0.05$).Concurrent chemo-radiotherapy gives better short term response to treatment in locally advanced hypopharyngeal cancers.

(E) Brain And Nervous System Cancer: Diagnosed In The Kamrup Urban District In 2008-12

Mr. Manoj Kalita (Statistician), Dr. J D Sharma (P.I – PBCR, HBCR), Dr. A C Kataki (Director)

Introduction: According to the Globocan 2012 brain and other nervous system (BNS, ICD-10: C 70-72) cancers were, 139,608 and 116,605 new cases were diagnosed in 2012 worldwide in male and female, representing 3.9 and 3.0 per 100,000 person-years[1]. Burden of BNS cancer is continuously rising over the decade both for male & female in India as well as for Kamrup Urban District (KUD). NCRP estimates for Trends by the year 2020 indicates will have a burden of 26251 (Male=14547 and Female=11704) Brain cancer cases[2]. The number of new cases of BNS cancer increased from 1.5 to 4.0 and 0.9 to 3.4 per 100,000 men and women from the year 2008 to 2012 in KUD. These rates are age-adjusted and based on 2008 and 2012 incident cases. KUD is the most common place in India in terms of BNS cancer occurrence when compared 2009-2011 NCRP published incidence data with 2012 KUD incidence data[3]. According to National Cancer Institute (NCI) the five year survival rate of BNS cancer was 33.3 %.



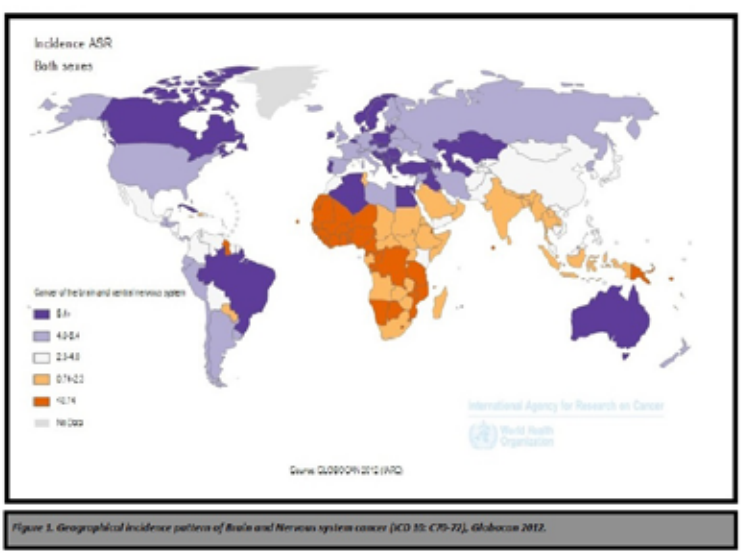
Materials & Methods: Age-Standardized Rates (ASR) (per 100,000 person-years) were calculated using the World Standard Population. The Kaplan-Meier test was used for calculating median survival time, and the differences between groups were evaluated by log-rank test. Statistical significance was defined as $P < 0.05$. Patients were selected from the PBCR-Guwahati database of the Kamrup Urban District at Dr. B. Borooah Cancer Institute, between the calendar year from 2010 to 2012 and followed up to 1st January 2016.

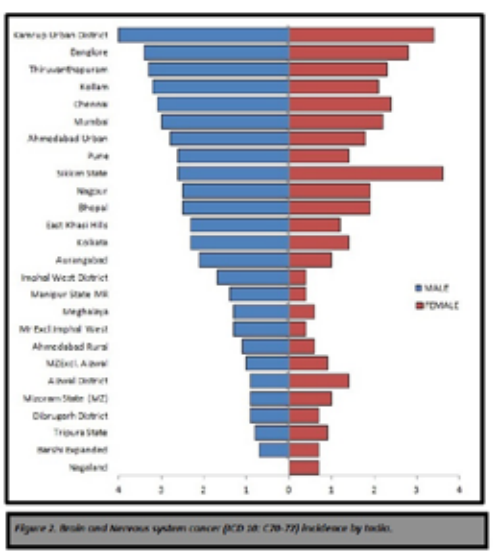
Results & Discussion: A total of 137 BNS cancer cases (male = 86, female = 51) were diagnosed during 2008-2012, which accounts only 2% of total cases and the pooled ASR for the five year period is 3.0 and 2.1 per 100 000 men and women.

According to Globocan 2012, there were 2, 56,213 new cancer cases, 1, 89,382 cancer deaths and 3, 42,914 people living with cancer (within 5 years of diagnosis) in 2012 worldwide. The overall age standardized cancer incidence rate is almost 30% higher in men than in women, with rates of 3.9 and 3.0 per 100,000, respectively.

The highest incidence rates are seen in the more developed regions of the world with rates 5.9 in male and 4.4 in female compared to less development regions age standardised rates 3.3 in male and 2.7 in female (Figure 1). In India when compared 2009 - 2011 NCRP published data with current 2012 KUD data it is found that KUD has the highest incidence in male while Sikkim in female within India (Figure 2).

The Overall 5 year median survival rate estimated by Kaplan Meir method for BNS Cancer was found as 21 months (95% CI 14.83, 27.17) (Figure 5). The overall 1, 3 and 5 year survival is 68%, 26% and 16% respectively. The survival rates for BNS cancer vary widely by age with younger people tending to have having better outlooks than older people. The median survival rate for those who are less than 40 years is 33 months (95% CI 25.39 40.61) compared to people who attained 40 years and more is only 15 months (95% CI 10.34 19.97). The difference in survival between the groups is found as statistically significant p=0.011 (Figure 6).





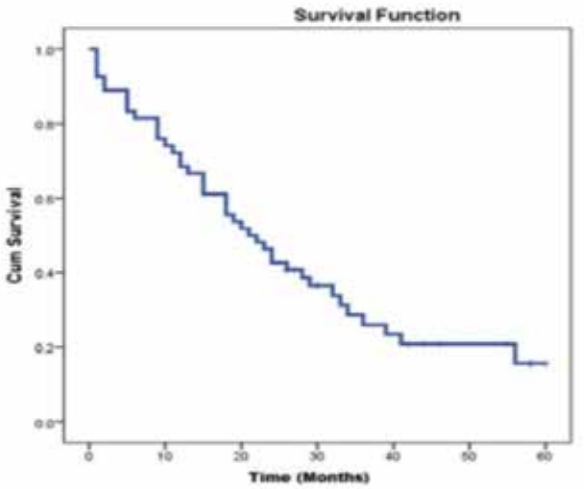


Figure 5. Overall Survival of BNS cancer (ICD 10: C70-72).

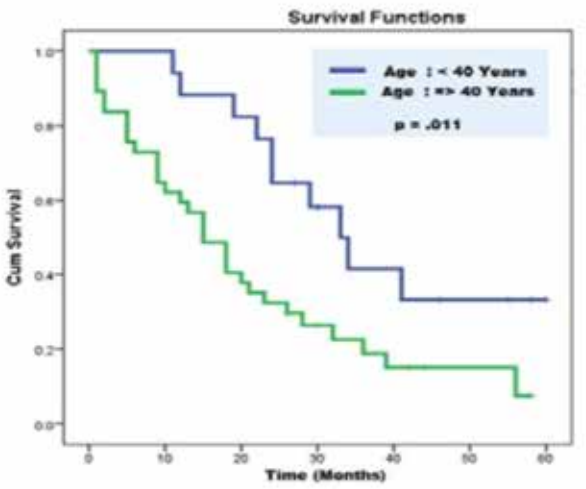


Figure 6. Survival of BNS Cancer (ICD 10: C70-72) by age.

An overall increase in incidence of BNS cancer was observed between 2008 (1.5 male cases, 0.9 female cases per 100,000) and 2012 (4.0 male cases, 3.4 female cases per 100,000), a 3 to 4 fold increase (Figure 3). In Indian context the incidence rate of KUD is much higher than national estimates (2.1 male cases and 1.2 female cases per 100,000) as per report of Globocan 2012. The age specific incidence rates are indicating that every single age group of KUD is at more risk than national estimate (Globocan 2012, India data) although there is no definite increasing or decreasing pattern was observed in the age groups of Kamrup urban district of India (Figure 4).

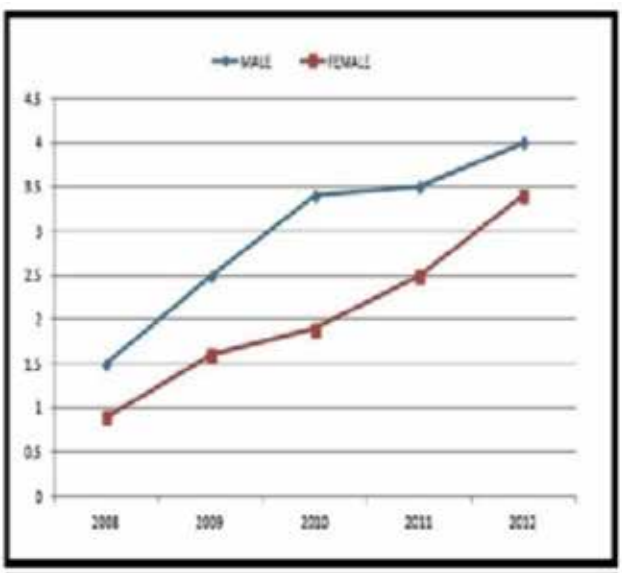


Figure 3. Overall trend in Brain and Nervous system cancer (ICD 10: C70-72) in KUD, 2008-2012.

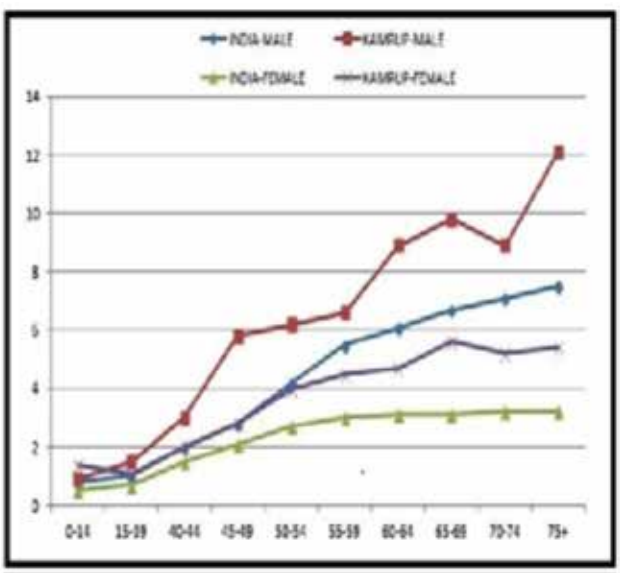


Figure 4. Comparision of ASyR - kamrup urban district with ASyR - India.

Risk Factors: Most of the time, the cause of a brain tumor is unknown, but the following factors may raise a person's risk of developing a brain tumor. Some of them are as follows[4]

1. **Age:** Brain tumors are more common in children and older adults, although people of any age can develop a brain tumor
2. **Gender:** In general, men are more likely than women to develop a brain tumor. However, some specific types of brain tumors, such as meningioma, are more common in women
3. **Radiation exposure.** The only well-established environmental risk factor for brain tumors is radiation exposure to the head, which most often comes from the treatment of other conditions
4. **Home and work exposures.** Exposure to solvents, pesticides, oil products, rubber, or vinyl chloride may increase the risk of developing a brain tumor, although there is not yet scientific evidence that supports this possible link
5. **Family history.** About 5% of brain tumors may be linked to hereditary genetic factors
6. **Ionizing radiation.** Previous treatment to the brain or head with ionizing radiation, including x-rays, has shown, in some cases, to be a risk factor for a brain tumor
7. **N-nitroso compounds.** Some studies of diet and vitamin supplementation seem to indicate that dietary N-nitroso compounds may raise the risk of both childhood and adult brain tumors

Conclusion: Although BNS cancer accounts only a small proportion of the total cancer cases the continuous increasing of the incidence is a matter of fact to be look after. It is predicted that in near future BNS cancer will became one of the main leading sites of cancer in KUD.

Reference:

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray, F. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: http://globocan.iarc.fr, accessed on 25/08/2015
2. National Cancer Registry Programme, Time Trends in cancer incidence rates 1982–2010. Bangalore: Indian Council of medical Research; 2013
3. National Cancer Registry Programme. Three years report of the Population Based Cancer Registries 2009–2011. Bangalore: Indian Council of Medical Research; 2013
4. Cancer research UK. Brain tumors risk and causes. Available at www.cancerresearchuk.org/ type/brain-tumour/about/brain-tumour-risks-and-causes. Last accessed on august 12th, 2016

CANCER MADE A NOTIFIABLE DISEASE

The following states made cancer a Notifiable disease. Reference: CRAB Vol. 18, Nov. 2012

1. **Tripura-Order dated 24/09/2008 (No. F.3 (163)–CH/MS/As/2008/2655**
2. **West Bengal – No. HF/O/PHP/402/5C-05/2010 dated Kolkatta the 20/12/2010**
3. **Punjab – Department of Health and Family Welfare - Order No. 2-3-011-4HB4-3226-dated 18/10/2011-2/3/2011-4HB4**
4. **Kerala – Principal Secretary of Health – D O No. 398/HS/2011 dated 28/12/2011**
5. **Tamil Nadu – G O (Ms) No. 132 dated 17/04/2012**

6. Government of Karnataka
(Abstract only)

No. HFW 189 CGM 2015, Karnataka Government Secretariat, Vikas Soudha, Bengaluru, Dated: 25/07/2015

Whereas cancer appears to be a matter of serious concern for us at the national and regional State level in the country.

And whereas the Indian Council of Medical Research recommends that it is absolutely necessary to initiate mandatory reporting of Cancer Registry Programme to facilitate planning, guidance, monitoring and evaluation of Cancer Research and Control Programme in country.

……And whereas, the data received on cancer in the state would be used to frame policy on prevention and control of cancer, establishing treatment facilities and cancer research and training centres in the state.

…….And whereas the pathologist should make it mandatory to receive the clinical details, physician details and other pertinent information while collecting the specimen for the purpose of notifying.

……And whereas in the event the doctor or the medical institution fails to comply with the above mentioned rules, he would be liable for punitive action as that would be decided by the Committee thereof.

Atul Kumar Tiwari,
Governor of Karnataka,
Principal Secretary to government,
Health and Family Welfare Department.

7. Government of Mizoram
No:J.11011/8/2012-HFW-Health & Family Welfare Department

Notification, Dated August 27/01/2014.

……Therefore, henceforth cancer is hereby made Notifiable for the purpose of registration and all persons concerned in hospitals (government and private), nursing homes, pathological labs, radiology centres and institutions imparting medical education and providing diagnosis, treatment and any other health care related facilities shall report diagnosed or suspected cases of cancer to the Principal Investigator, Mizoram Population Based Cancer Registry, Civil Hospital, Aizawl, Mizoram in the Proforma appended herewith and available with Mizoram Population Based Cancer Registry, within a period not exceeding one month from the date of diagnosis or the date on which suspicion arose. Identity of the patient should not be revealed by PBCR or utilized for any other purpose except for the purpose of registration and analysis of the data.

Esther Lalruatkimi,
Secretary to the Govt. of Mizoram
Health & Family Welfare Department

8. Government of Arunachal Pradesh
Department of Health & Family Welfare, A P Civil Secretariat: Itanagar

No. HFW – 05/2015 Dated Itanagar the 29th July

……Therefore, all government as well as private hospitals/Nursing home, private diagnostic centres/ laboratories are requested to report/notify all cancer cases in the core Proforma to the principal investigators of Population Based Cancer Registries (PBCR), Arunachal State Hospital, Naharlagun and General Hospital, Pasighat. All are requested to extend cooperation in the national endeavor to generate reliable data on incidence and mortality in Arunachal Pradesh.

Indra Mallo, IAS
Secretary (Health and FW)
Govt. of Arunachal Pradesh, Itanagar
Dated Itanagar the 3/8/2015

9. Ahmedabad – Government order

Registration of diagnosed or suspicious cases of cancer in Gujarat State

GOVERNMENT OF GUJARAT
Health and Family Welfare Department
No -ICR-102016-521-S
Sachivalaya, Ghandhinagar
Date 20 /5/2016 MAY 2016

Preamble

Incidence and mortality of cancer cases are increasing across the globe. While in Gujarat, incidence of oral cavity cancer is highest in India and other cancers are also on rise. All these cancer cases need to be recorded and reported.

The Gujarat Cancer and Research Institute, Ahmedabad being a State Institute for cancer control; Cancer registry is functioning at The Gujarat Cancer and Research Institute since 2004 under the guidance and supervision of National Cancer Registry Programme. This registry data are helpful in measuring comprehensive cancer load, incidence and trend of the disease. It also guides in planning as well as implementation of the cancer control programme.

Resolution:

The Government of Gujarat after due consideration of the matter has found it expedient that a diagnosis or suspicion of cancer cases should be reported to the institute.

Therefore, all hospitals (Government or Private), Nursing Homes, Pathological, Clinical and Radiological Labs, Vital statistics division and Institution imparting medical education and providing diagnosis, treatment and any other health care related facilities shall provide information of diagnosed or suspicious cases of cancer to The Gujarat Cancer and Research Institute, Ahmedabad in prescribed format either in soft copy or hard copy within a period not exceeding three weeks from the date of diagnosis or the date on which the suspicion arose.

P.T.O.....

....2...

The authorized representative of the Gujarat Cancer & Research Institute shall visit the aforesaid hospitals (Government or Private), Nursing Homes, Pathological, Clinical and Radiological Labs, Vital statistics division and Institution imparting medical education and providing diagnosis, treatment and any other health care related facilities twice a month for collection of such information/reports and should be allowed to abstract the medical records of such patients if necessary. All concerned should maintain the strict confidentially on the identity of the patients suffering from the disease.

By order and in the name of Governor of Gujarat.

(V. G. Vanzara)
Joint Secretary
Health and Family Welfare Department,
Government of Gujarat

To,

- Private Secretary to Hon Minister (Health) Swarnim Sankul-1, Gandhinagar.
- The Commissioner, Health, Dr. Jivaraj Mehta Bhavan, Gandhinagar
- The Additional Director (M.E.) Dr. Jivaraj Mehta Bhavan, Gandhinagar
- The Director, Gujarat Cancer and Research Institute, Ahmedabad.
- All hospitals (Government or Private), Nursing Homes, Pathological, Clinical and Radiological Labs, Vital statistics division and Institution imparting medical education and providing diagnosis, treatment and any other health care related facilities. (Through The Additional Director (M.E.) Dr. Jivaraj Mehta Bhavan, Gandhinagar)
- All District Health Officers
- Section Officer, (V, J, A and E Branches) Health and Family Welfare Deptt. Sachivalay, Gandhinagar.
- Select File
- Branch Collection

10. Chennai –Tamil Nadu

Declaration by Chief Minister

The request for declaring cancer as a Notifiable disease by law through legislation found favour with the chief minister and she immediately directed the officials to act without delay. The Tamil Nadu Cancer Registry Project (TNCRP) undertaken by the institute proved to be the stepping stone.

INTERNATIONAL ASSOCIATION OF CANCER REGISTRIES MEETING 2015

The 37th Annual Meeting of International Association of Cancer Registries(IACR) was held at Taj Mahal Palace hotel, Mumbai, 8 – 10 October 2015, hosted by Tata Memorial Centre, Mumbai

This is the second time that the annual meeting of IACR was held in India.

Earlier the 18th annual meeting was held at Bangalore in 1994 hosted by Kidwai Memorial Institute of Oncology, Bangalore.

The accompanying photographs are taken during the inauguration of the 37th meeting.

IACR Meeting Photos

Studies (Oral & Poster) Presented In IACR 2015 Meeting By NCRP Registry Staff And Registries

1. **Title**: Cancer registration in Tamil Nadu, India, covering a population of 73 million since 2012: challenges and opportunities

Authors: Dr. Rajaraman Swaminathan, Dr. Viswanathan Shanta, Study Group Tamil Nadu Cancer Registry Project – Cancer Institute (WIA), Chennai

Conclusion: *TNCRP has spread awareness state-wide on improving cancer documentation even in minor sources for passive reporting in future and provided vital clues from remote areas for effective cancer control*

2. **Title**: Projection of burden of cancer cases in India (2015-2020)

Authors: Sathish Kumar, Stephen S, Priyanka Das, Vinay Urs K S, Anish John, Akanksha Tiwari, Chandrika K R, Nandakumar A – NCDIR

Conclusion*: The projections of the numbers of cancers give a fair idea of the burden, both overall and by specific anatomical site. Control of communicable diseases has increased life expectancy, and therefore more of the population lives longer, resulting in greater population in the older age groups. The increase in population due to growth also contributes to the increase in the number of cancer cases.*

3. **Title**: Profile of paediatric cancer seen in Tata Memorial Hospital, Mumbai

Authors: Dr. Ganesh Balasubramanyam, Mrs. Sandhya Cheulkar, Mrs. Sapana Kothare, Mrs. Sushma Saoba, Dr. S D Baavali – TMH, Mumbai

Conclusion*: The most common cancers among the paediatric group were leukemias/ lymphomas followed by bone and soft tissue sarcomas, malignant bone tumours, CNS-intracranial neoplasms's, retinoblastoma and other tumours like renal tumours, neuroblastoma, hepatoblastoma, and germ cell tumours were also observed.*

4. **Title**: Recent trends of lung, mouth and tongue cancer in Bhopal (India): The new challenges

Authors: Mr. Atul Shrivastava, Mrs. Sushma Shrivastava, Dr. Reeni Malik, Mrs. Alka Goley – PBCR, Bhopal

Conclusion*: The incidences of tongue and mouth cancers among males of Bhopal are highest in the world. The high prevalence of tobacco chewing in the population underlines the increasing incidence of mouth cancer in the city of Bhopal, and is a cause of concern for the cancer control activities in the region. The Government of Madhya Pradesh ban on tobacco chewing has been a significant move toward the cause, but more efforts are required for tobacco awareness, oral screening and early detection programmes in the region.*

5. **Title**: Geo-relationship between cancer cases and the environment in Trivandrum, India

Authors: Dr. G Preethi S, Dr. Aleyamma Mathew – RCC, Trivandrum

Result*: Few panchayats and wards showed relatively high cancer cases. Detailed results will be presented.*

6. **Title**: Trends in esophagus and stomach cancer incidence in Bangalore, India

Authors: Mr. Bydarahally Ramaiah Gopala Krishnappa, Mr. Culmalige Raghu Vijay – KMIO, Bangalore

***Result**: Age-standardised esophageal cancer incidence rates increased in males, in females failed to register a significant trend over the study period. Overall, gastric cancer decreased from 9.81 and 5.48 rates per 100,000 person-years in 1982-86 to 9.45 and 5.25 in 2002-07, among men and women respectively. Whereas esophageal adenocarcinomas increased sharply in both sex, among men, esophageal squamous cell cancer rates increased steadily from the mid-1982s onwards a bit decline was observed from 1997, the same trend observed in females. The gastric cancer decreased over the study period. There was marked decrease in the incidence of esophago-gastric cancer presenting with unknown and unspecified morphology reported*

7. **Title**: Comparison of time trends of two periods of breast and cervical cancers in Ahmedabad city

Authors: Dr. Janmesh Shah, Mr. Jayesh Solanki, Ms. Vishruti Pandya, Mr. Himanshu Patel, Dr. Geeta Joshi, Dr. Rakesh Vyas – GCRI, Ahmedabad

***Conclusion**: The study showed a significant rise in breast cancer incidence in Ahmedabad city which might be attributed to the risk factors like increased urbanization, lifestyle and dietary changes in women. A large scale breast cancer screening approach like breast self-examination, clinical breast examination mammography should be undertaken which may helpful in early detection and reduce breast cancer morbidity. While in cervical cancer, better hygienic awareness and accessible screening tools may be the cause of declining trend.*

8. **Title**: Opposite trends in cervix and breast cancer incidence in Chennai: Age, period, cohort analysis, 1982-2011

Author: Dr. Ranganathan Rama, Dr. Rajaraman Swaminathan, Dr. Viswanathan Shanta, Dr. Freddie Bray – Cancer Institute (WIA), Chennai

***Conclusion**: The diverging trends of breast and cervix cancer incidence may be partly attributed to the transition in the socio-economic and lifestyle scenario in Chennai, which has undergone a see-through change over the years.*

9. **Title**: Incidence and trends of Urological malignancies among men in Delhi, India

Authors: Mr. N Manoharan, Dr. P K Julka, Dr. Omana Nair, Dr. Sunil Kumar Varma, Mr. K Satish Kumar, Dr. G K Rath – Delhi Cancer Registry, AIIMS, New Delhi

***Conclusion**: The age standardized incidence rate of bladder cancer in Delhi was highest among Indian registries, whereas prostate and kidney was the second highest among Indian registries preceded by Kamrup Urban District and Thiruvananthapuram respectively. Though the incidence rates in Delhi are comparatively higher than other metropolitan cities in India, it is lower than Western countries. Genetic factors and dietary habits could be a contributory factor to these malignancies but to elucidate this, further studies will be required.*

10. **Title**: Urban-rural differences of cancer incidence and mortality in Trivandrum, Kerala (2012-2013)

Authors: Dr. Aleyamma Mathew, Dr. Preethi G S, Dr. C Kalavathy, Ms. G Padmakumari

Amma, Dr. Sebastian Paul, Dr. A Nandakumar – RCC, Trivandrum

***Conclusion**: The overall and for some of the leading cancers such as breast, prostate, rectum, corpus uteri incidence rates are observed to be the highest in the country. Even though the urban-rural difference in Kerala is minimal, cancer incidence is higher among urban populations. Higher incidence of female breast, rectum and prostate cancer exist in urban populations, and lung and thyroid cancers for rural populations.*

11. **Title**: Nasopharyngeal cancer: Result of survival study from a tertiary care hospital in Mumbai

Authors: Dr. Arshi Khan, Dr. Ganesh Balasubramanyam, Dr. Rajashree Gaidhani, Sushama Saoba, Dr. A K D'Cruz, Dr. Prathamesh Pai, Dr. J P Agarwal, Dr. Sarbani Lashkar, Dr. Rakesh Jalali, Mitali Sapkal – TMH, Mumbai

***Conclusion**: Nasopharyngeal cancer may not cause symptoms early on, and it may not be picked up until it is at a more advanced stage. Most nasopharyngeal cancers are diagnosed at stage III or IV. Though the patients present at advanced stage of disease, combination therapies give better outcome.*

12. **Title**: A descriptive epidemiological study of Ewing's sarcoma of bone in Indian population

Authors: Dr. Debjit Chakraborty, Dr. Meesha Chaturvedi, Dr. Sukanya Rangamani, Ms. Akansha Tiwari, Mr. S. Stephen, Dr. A Nandakumar – NCDIR, Bangalore

***Conclusion**: The epidemiological profile of osteogenic Ewing's sarcoma cases in the Indian population corroborates with findings from other parts of the world except that we found a relatively higher proportion of cases above the age of 30.*

13. **Title**: Software module for hospital based cancer registry data management

Authors: Mr. N Sureshkumar, Mr. Sudarshan K L, Mrs. R S Roselind, Mr. K Sathish Kumar, Mr. Vijay Kumar D, Mr. Ankush Jain, Mr. Monesh B Vishwakarma, Mrs. Sina K Vivekanandan, Mr. C Somasekhar, Dr. A Nandakumar – NCDIR, Bangalore

***Conclusion**: NCDIR is the repository of the structured data, and the HBCRDM application is standard format for all the hospitals, which helps in comparison. A coordinating unit has developed an e-monitoring program for coverage of cases and quality of data from all the collaborating hospitals. Using the HBCRDM application the annual reports of NCDIR/ hospitals could be published with minimal effort. The trend of particular cancers over the years could be analysed. The application will also provide accurate data to respective population based cancer registries.*

14. **Title**: Effects of tobacco and alcohol drinking and risk of pharyngeal cancer in south Indian men

Authors: Mr. Doddajunjannagari Jayaram – KMIO, Bangalore

***Conclusion**: In summary, this study shows that high values of estimates of attributable risk percent (ARP) and population attributable risk percent (PARP) confirmed the positive impact of the reduction or elimination of tobacco and alcohol consumption practices on reducing the risk of pharyngeal cancer in the population of South India.*

15. **Title**: Natural background radiation exposure and cancer – the special purpose cancer registry, Karunagappally

Authors: Dr. Padmavathy Amma Jayalekshmi, Dr. Raghu Ram K Nair, Dr. Paul Sebastian – RCC, Trivandrum

***Conclusion**: The data collected is being used for organizing cancer control measures and support services in the registry area. The registry is also actively involved in research programmes, mainly related to the biological effects of radiation, population based survival and mortality studies.*

16. **Title**: Trends in demographic and clinical characteristics of esophageal cancers at BBCI from 2010-2013

Authors: Dr. Manigreeva Krishnatreya, Dr. Jagannath Sharma, Dr. Amal Kataki, Mr. Pintu Nandy, Dr. Nizara Baishya – BBCI, Guwahati

***Conclusion**: This analysis has demonstrated an increase in the gradual transition from rural to urban patients for esophageal cancers, which reflects the recent population migration from rural to urban areas in our population. Identifying the changing trends in clinical characteristics of esophageal cancer is necessary from the perspective of health planning for effective control measures for esophageal cancer in our population.*

17. **Title**: Pre-treatment circulating monocyte count – A prognostic marker for patients with oral cavity cancer

Authors: Dr. Saurabh Bobdey, Dr. Ganesh Balasubramanyam – TMH, Mumbai

***Conclusion**: A higher pre-treatment circulating monocyte count is an independent prognostic factor and may serve as clinically convenient and useful biomarker for survival of patients with oral cavity cancer.*

18. **Title**: Survival and treatment modality patterns in hypopharyngeal cancer: A hospital based study

Authors: Dr. Arshi Khan, Dr. Ganesh Balasubramanyam, Rajashree Gaidhani, Sushama Saoba, Dr. A K D'Cruz, Dr. Prathamesh Pai, Dr. J P Agarwal, Dr. Sarbani Lashkar, Dr. Rakesh Jalali, Mitali Sapkal – TMH, Mumbai

***Conclusion**: There has been a trend away from surgical therapy for hypopharyngeal cancer, wherein those treated with radiation combined with chemotherapy showed better outcomes as compared to those treated with radiation alone.*

19. **Title**: Trends of cancer observed in Tata Memorial Hospital Based Cancer Registry, Mumbai in 25 years period

Authors: Dr. Ganesh Balasubramanyam, Dr. R A Badwe, Dr. A K D'Cruz, Ms. Sushama Saoba – TMH, Mumbai

***Conclusion**: The huge voluminous data collected and analysed provided a good opportunity for research in terms of changing patterns of cancer and also the treatment provided over the years. Detailed insight will be provided during the presentation of the data.*

20. **Title**: 25 years experience of cancer registration in population based rural cancer registry, Barshi

Authors: Mr. Nandkumar Panse, Dr. Rajesh Dikshit, Dr. A Budukh, Dr. B Nene, Dr. R Badwe, Mr. Sidramayya Mathapati

***Conclusion**: The innovative methodology has facilitated the process of cancer registration*

in rural areas. It had has a positive impact on cancer control activities. The registry has created resources for epidemiological studies. National and international studies are currently being undertaken.

21. **Title**: Burden of head and neck cancers in Kamrup Urban District Cancer Registry of Assam (India)

Authors: Mrs. Arpita Sharma, Dr. Jagannath Dev Sharma, Dr. Debanjana Barman – PBCR, Guwahati

***Conclusion**: Overall, head and neck cancers are mostly tobacco related and are encountered in a relatively advanced stage. Understanding the pattern and incidence of various head and neck cancers is of utmost importance for primary prevention and early detection to adequately manage thee cancers comprehensively in the community.*

22. **Title**: Incidence and pattern of tobacco related cancers in Kamarup Urban District (Report from PBCR Guwahati)

Author: Dr. Debanjana Barman, Dr. Jagannath Dev Sharma, Ms. Arpita Sharma, Mr. Manoj Kalita – PBCR, Guwahati

***Conclusion**: Tobacco is the single most important cause of preventable cancer death globally. Prevention of tobacco habits and early detection of these cancers are most important strategy in cancer control*

23. **Title**: A rapid growth of male mouth cancer in Ahmedabad Urban Agglomeration area

Author: Mr. Jayesh Solanki, Mr. Himanshu Patel, Ms. Vishruti Pandya, Dr. Janmesh Shah, Dr. Geeta Joshi, Dr. Rakesh Vyas – BBCR Ahmedabad Urban Agglomeration area

***Conclusion**: A remarkable growth in the occurrence of mouth cancers in males among the population of Ahmedabad reveals an urgent need for tobacco control and other preventing measures at community level in the city. According to the Global Adult Tobacco Survey (GATS), Gujarat was second in the highest prevalence of use of areca nut based tobacco products (which include gutka) among men. The results advocated vigorous preventing measures to reduce the incidence of mouth cancers.*

24. **Title**: Information technology driving cancer registration in a developing country like India

Author: Mrs. Priyanka Das, Dr. Meesha Chaturvedi, Mr. Vinay Urs K S, Mr. Anish John, Mrs. Akansha Tiwari, Mr. K Sathish Kumar, Mr. S Stephen, Mrs. Roselind F S, Mr. Sudarshan K L, Dr. Nandakumar A – NCDIR, Bangalore

***Conclusion**: NCDIR houses medical, statistical and software scientists to make this the hub of cancer research supported by the Government of India. A sustained evolutionary approach in software development to address registry specific problems shall improve the quality and accuracy I cancer registration.*

25. **Title**: An epidemiological study on delay in treatment initiation of oral cancer patients

Author: Dr. Ramesh Cheluvarayaswamy R – KMIO, Bangalore

***Conclusion**: The factors that may be barriers for diagnosis and treatment of oral cancer seem to be mainly related to socio-economic factors and the lack of awareness about the disease. From a public health perspective, it is imperative to emphasise awareness among the public to ensure the possibility of early detection and presentation at early stage so that optimal*

therapy can be ensured.

26. **Title**: Trends in prostate cancer incidence in Bangalore 1982-2010

Author: Mr. Culmaligae Raghu Vijay – KMIO, Bangalore

***Conclusion**: Since prostate cancer trends are significantly increasing in Bangalore, the same trend was observed in other metropolitan cities in India, like other developed countries. The date of first diagnosis is almost in advance stage hence, awareness and early detection through campaigns is needed.*

27. **Title**: Trends of five leading sites of rural cancer registry Ahmedabad district

Author: Ms. Vishruti Pandya, Mr. Jayesh Solanki, Mr. Himanshu Patel, Dr. Janmesh Shah, Dr. Geeta Joshi, Dr. Rakesh Vyas – GCRI, Ahmedabad

***Conclusion**: The trends showed a fair account of the direction in which the incidence rates of the leading sites of cancer occurred among the population of the Ahmedabad rural registry proceeds across the years. However, more years of data would be required in drawing the conclusions about the significance of trends and more stable rates.*

28. **Title**: Brain and central nervous system cancer diagnosed in the Kamrup Urban District in 2008-2012

Author: Mr. Manoj Kalita, Dr. Jagannath Dev Sharma, Dr. Amal Chandra Kataki – PBCR-HBCR, Guwahati

***Conclusion**: Although BNS cancer accounts for only a small proportion of total cancer cases, its continuous increasing incidence is a matter of fact to be looked after. It is predicted that in near future, BNS cancer will became one of the main leading sites of cancer in KUD.*

29. **Title**: Independent department wise software modules in oncology

Author: Mrs. Roselind F S, Dr. Sukanya Rangamani, Mr. N Sureshkumar, Mr. Sudarshan K L, Mr. Monesh B Vishwakarma, Mrs. Sina K Vivekanandan, Mrs. Chandrika K R, Dr. Nandakumar A – NCDIR, Bangalore

***Conclusion**: These software modules were specifically developed by NCDIR-NCRP as many hospitals do not have a hospital information system and usually miss registering many patients. The software components ease patient treatment documentation and support each hospital to create a Hospital Based Cancer Registry and contribute data to the NCRP during their routine clinical practice*

30. **Title**: Reproductive factors and pre-malignant conditions of cervix uteri cancer: Hospital based screening programme

Author: Dr. C Kalavathy M, Ms. N Sarithav, Ms. Akhila R, Dr. K Jayasree, Dr. Aleyamma Mathew – RCC, Trivandrum

***Conclusion**: Difference in proportions were observed for factors such as age at marriage, living with husband, number of abortions, number of pregnancies and age at first delivery between women with normal and pre-malignant lesions (LSIL and HSIL) of cervix uteri. Detailed results will be presented.*

31. **Title**: Software module for patterns of cancer care and survival studies

Author: Mr. Sudarshan K L, Mrs. Roselind F S, Mr. Sathish Kumar K, Mr. Sureshkumar N, Mr. Vijay Kumar D D, Mr. Ankush Jain, Mr. Monesh B

Vishwakarma, Mrs. Sina K Vivekanandan, Mrs. Chandrika K R, Dr. Nandakumar A – NCDIR, Bangalore

***Conclusion**: The data is stored in a structured manner so that it facilitates various kinds of analysis. The coordinating unit NCDIR has the e-monitoring of the coverage of cases and quality of data from all the collaborating centres. The data from the web server is downloaded to the NCDIR local server regularly. Clinicians can get instant tables and graphs of their hospital data for particular/consolidated years.*

32. **Title**: Trends in cancer incidence in Trivandrum taluk (2005-2014)

Author: Dr. Aleyamma Mathew, Dr. G Preethi S, Dr. C Kalavathy M, Ms. G Padmakumari Amma, Dr. Sebastian Paul, Dr. A Nandakumar – RCC, Trivandrum and NCDIR, Bangalore

***Conclusion**: Oral cavity, lung, prostate, pharynx, larynx and lymphoma are the first five leading cancer sites among males and the corresponding sites among females are breast, thyroid, cervix uteri, ovary and lymphoma. Increased incidence rates were observed for all these cancers except cervix uteri. The increase in the number of cancer cases was partly due to the improvement in the data collection of the cancer registry.*

33. **Title**: Assessment of completeness in Trivandrum cancer registry data: Capture-re-capture method

Author: Dr. Preethi Sara George, Dr. Aleyamma Mathew – RCC, Trivandrum

***Conclusion**: It was observed that the rates calculated based on the observed number of cases are under-estimated. Efforts need to be made for reducing the proportion of missing cases. Capture-re-capture method is a useful approach for finding the proportion of missing cases in a cancer registry.*

34. **Title**: Trends in Chennai demographic registry: Data quality indices, incidence and pattern, 1982-2011

Author: Mr. Janakiraman Murugaiyan, Mr. Sivagurunathan Balasubramanian, Mr. Pitchaimuthu Sampath, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: Cancer registration operations in MMTR have constantly evolved suitably to uphold a high degree of data quality in a developing and changing environment.*

35. **Title**: Childhood cancer in India – Recent evidence on trends and magnitude of burden

Author: Dr. Sukanya Rangamani, Mr. S Stephen, Mr. Anish John, Ms. Akanksha Tiwari, Dr. Ambakumar Nandakumar – NCDIR, Bangalore

***Conclusion**: Childhood cancers in India pose a significant challenge to cancer control as derived from the recent population based data.*

36. **Title**: Preliminary results of rural population based cancer registry in Ratnagiri and Sindhudurg, Maharashtra, India

Author: Dr. R Badwe, Dr. A K D'Cruz, Dr. Ganesh Balasubramanyam, Mrs. Sandhya Cheulkar, Mrs. Sakshi Sawant – TMH, Mumbai

***Conclusion**: One of the major observations is that among males, mouth was the leading cancer in both the districts because of the high use of tobacco. Among females, breast cancer*

rates were higher than cervix cancer rates, probably indicating changing life style in these areas. Detailed analysis will be presented.

37. **Title**: Descriptive epidemiology of female breast cancer in Delhi, India

Author: Mr. N Manoharan, Dr. Pramod Kumar Julka, Dr. Omana Nair, Dr. Gaura Kishore Rath – Delhi Cancer Registry, AIIMS, New Delhi

***Conclusion**: Breast cancer, which was the second most common cancer in Delhi in 1988, surpassed cancer of the cervix and became the leading site of cancer over the years. The same trend was also noted in other metropolitan cities viz. Bangalore, Bhopal and Chennai. Though the ASR in Delhi is comparable with other metropolitan cities in India, it is low compared to Western countries. Changing life styles in metropolitan cities like delayed marriage, late age at first child birth, lower parity and higher socio economic status, may be some of the probable primary causes for higher incidence of breast cancer in urban areas.*

38. **Title**: Trends in cancer incidence in female breast, cervix uteri, corpus uteri and ovary in India

Author: Mrs. Shravani Koyande, Dr. Vinay Deshmane – Indian Cancer Society, Mumbai

***Conclusion**: All these four cancers (breast, cervix, corpus uteri and ovary) constitute more than 50% of the total cancers in woman, and are also serious diseases in women. The breast, ovary, corpus uteri cancers are increasing, which is an alarming bell to understand the etiology of these cancers in depth. Analytic epidemiology studies should be planned in the near future on a priority basis.*

39. **Title**: Liver cancers in India – A report from population based cancer registries (1982-2010)

Author: Dr. Meesha Chaturvedi. Dr. Debjith Chakraborty, Ms. Akanksha Tiwari, Mr. Anish John, Mr. Vaitheeswaran K, Dr. Nandakumar A – NCDIR, Bangalore

***Conclusion**: This descriptive study indicates a male predisposition for the cancer. Older adults are found to be affected more. Since the specificity of this tumour lies mainly on the basis of diagnosis, a comparison with international registries shows higher microscopic verification in Indian registries. A rising trend was observed.*

40. **Title**: Breast cancer survival in India: A retrospective review

Author: Ms. Jignasa Sathwara, Dr. Ganesh Balasubramanyam – TMH, Mumbai

***Conclusion**: There are few studies on breast cancer survival reported from the Indian subcontinent due to incomplete follow-up. In India, breast cancer patients with advanced-stage disease on presentation seem to account for the poor overall survival. It is imperative that comprehensive breast cancer screening and treatment strategies be developed to enable earlier diagnosis and improve the survival of breast cancer in India.*

41. **Title**: Cancer in young adults between the ages of 15-34 years in Greater Mumbai

Author: Ms. Shraddha Shinde, Mrs. Shravani Koyande – Indian Cancer Society, Mumbai

***Conclusion**: When the age adjusted rates have been compared with nationally and internationally, the rates are observed to be low*

in both the sexes.

42. **Title**: Trends in Dindigul Ambilikkai Cancer Registry (DACR): Data quality indices, incidence and pattern, 2003-2012

Author: Mr. Ramanujam Selvakumaran, Mr. Pitchaimuthu Sampath, Dr.O Esmy P, Dr. Rajaraman Swaminathan, Dr. Rengaswamy Sankaranarayanan – Cancer Institute (WIA), Chennai

***Conclusion**: DACR has provided valuable leads to cancer surveillance and cancer control in Tamil Nadu.*

43. **Title**: Cancer unknown primary (CUP): Trend and association with registration practices in Chennai, 1982-2011

Author: Mr. Pitchaimuthu Sampath, Mr. Sivagurunathan Balasubramanian, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: The overall CUP% trend was fluctuating in MMTR and reducing DCO% coupled with measures facilitating more linkages and access to clinical documentation on cancer cases are very essential to reduce CUP% in future.*

44. **Title**: Population based childhood cancer registry: Incidence, pattern and trend in Chennai, 1982-2013

Author: Mrs. Anandan Parimala, Mr. Natarajan Sridhar, Ms. Thandavarayan Chandrakala, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: PBCCR has shown encouraging signs of improved documentation of clinical and follow up data on childhood cancers as a routine in major data sources.*

45. **Title**: Evaluating active methods for complete follow up in Chennai, India, at two time points

Author: Ms. Parasuram Shanthi, Mrs. Dhanasekaran Lakshmi, Dr. Ranganathan Rama, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: Annual inquiry enhances 5-year complete follow up in HBCR. Additional efforts for tracking patients on a continuous basis are indispensable for success. Routine annual telephone inquiry along with the continuous tracking for and updating of new contacts are very essential to enhance 5-yer complete follow up in any HBCR.*

46. **Title**: A Survival study of cheek cancer and trends in Chennai, India, 1985-2011

Author: Dr. Ranganathan Rama, Ms. Parasuram Shanthi, Ms. S Kalyani M, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: No change in advanced stage at reporting with insignificant improvement in survival over 27 years period reiterates the need to step up cancer awareness, screening and early detection.*

47. **Title**: Evolution of hospital based clinical care registry in Chennai,India, 1985-2011

Author: Ms. S Kalyani M, Ms. Parasuram Shanthi, Dr. Ranganathan Rama, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: HBCR in Chennai has successfully translated into HBCCR to routinely provide cancer outcome statistics on major*

cancers for correlation with treatment milestones on a continuous basis towards effective cancer control.

48. **Title**: A study of breast cancer in Chennai, India, 1982-2011

Author: Mrs. Jayaraman Vidhya, Dr. Ranganathan Rama, Mr. Pitchaimuthu Sampath, Ms. Parasuram Shanthi, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: Increasing incidence of breast cancer emphasizes the need of public awareness campaign and organized screening and early detection.*

49. **Title**: Data quality in Hospital based cancer registry (HBCR), Chennai, 1999-2000 versus 2009-2010

Author: Mr. Poorasamy Sivakumar, Mrs. Arokiyasamy Pitchai, Ms. Parasuram Shanthi, Dr. Ranganathan Rama, Dr. Viswanathan Shanta, Dr. Rajaraman Swaminathan – Cancer Institute (WIA), Chennai

***Conclusion**: Involving HBCR staff in key hospital-registration operations, regular training, coding board and good liaison with clinical fraternity would ensure adequate documentation resulting in high data quality in HBCR.*

50. **Title**: Profile of cervical cancer patients visiting a tertiary care hospital in India

Author: Aanchal Jain, Ganesh Balasubramanyam, Saurabh Bobbdey – TMH, Mumbai

***Conclusion**: In India, there are few studies on the profile of cancer patients visiting health care facilities. This study highlights certain important baseline characteristics of cervical cancer patients. This basic information on profile of patients can help plan and efficient utilization of hospital services especially in resource-poor countries like India.*

51. **Title**: Descriptive epidemiological study of geriatric cancer seen in Tata Memorial Hospital, Mumbai

Author: Dr. Ganesh Balasubramanyam, Ms. Sushama Saoba, Dr. R Badwe, Dr. A D'cruz – TMH, Mumbai

***Conclusion**: The most common cancers in the geriatric group are similar to the trend seen among adults in terms of the leading cancers. Though the life-span in Indians is between 60-75 years, it is quite remarkable that about 15-20% of the cancers are seen in the geriatric group. The details of other variables will be presented.*

52. **Title**: Trends of breast, cervix and ovary cancers among women of Bhopal: A changing scenario

Author: Mrs. Sushama Shrivastava, Mr. Atul Shrivastava, Dr. Reeni Malik, Dr. Sunil Surange – PBCR, Bhopal

***Conclusion**: The trends have resulted in a significant change in the load and pattern of these cancers among the female population in Bhopal. The effective implementation of cervical screening programs, the impact of urbanization and changes in lifestyle are the major reasons for the observed changes in trends and pattern of these cancers. The observed changes in the load and pattern of these cancers will help in redefining cancer control activities for females in the region.*

53. **Title**: Enhancing completeness, improving the quality and achieving timeliness in data finalization: The digital way

Author: Dr. Reeni Malik, Mrs. Alka Goley, Mrs. Shubhra Trivedi – PBCR, Bhopal

***Conclusion**: Training of medical record personnel, ensuring totality in electronic medical records and software based processing of records has resulted in enhancing completeness of data, improving the quality of registration with timeliness in data finalization.*

54. **Title**: Patterns of cancer in Punjab – A study of 500 cases

Author: Dr. Vijay Bodal, Dr. Manjit Singh Bal, Dr. Mohanvir Kaur, Dr. Sarbhjit Kaur, Dr. Jaspreet Kaur, Dr, Chetan Dass - Research and medical education Punjab, Patiala and Indian Council of Medical Research, New Delhi

***Conclusion**: Breast cancer was the most common among all the cancers. In males, the most common cancer was colon cancer and in females, it was breast cancer.*

55. **Title**: Awareness of oral cancer among residents of Chandigarh

Author: Professor Sushmita Ghoshal, Dr. Puneet Nagpal, Dr. Rohit Mahajan, Mr. Manpreet Singh, Mr. Akshay Sharma, Dr. Niranjan Khandelwal – PGIMER, Chandigarh

***Conclusion**: Most of the participants seemed to be aware of the carcinogenic effect of tobacco and the early signs of oral cancer. However, they are part of a highly motivated group, primed with several exposures to cancer awareness exhibitions. Cancer awareness programs need to be widely conducted in the community to increase awareness and aid cancer control*

56. **Title**: Risk factors for loco-regional recurrences in carcinoma Breast – post treatment – HBCR, PGIMER, Chandigarh experience

Author: Dr. Darasani Niharika, Dr. Poornima Thakur, Dr. Rakesh Kapoor, Dr. Narendra Kumar, Dr. Sushmita Ghoshal – PGIMER, Chandigarh

***Conclusion**: Aged below 35 years and tumour size greater than 5 cm were significant factors associated with local recurrence. These factors along with other i.e., stage, lympho vascular invasion, extra-capsular extension and those with treatment default are necessary to predict the risk of local recurrence and prognosis of the patient.*