

Conducting Clinical Research in A Comprehensive Cancer Centre in Rural India

Shehnaz Kantharia, Siddharth Vyas, Zahoor Ahmed Teli, Rajesh A Kantharia*

Department of Head & Neck Surgical Oncology, Kailash Cancer Hospital & Research Centre, Goraj.

Article Info

Received: November 23, 2021

Accepted: December 06, 2021

Published: December 10, 2021

***Corresponding author:** Rajesh A Kantharia, Department of Head & Neck Surgical Oncology, Kailash Cancer Hospital & Research Centre, Goraj.

Citation: Shehnaz Kantharia, Siddharth Vyas, Zahoor Ahmed Teli, Rajesh A Kantharia (2021) "Conducting Clinical Research in A Comprehensive Cancer Centre in Rural India". *Clinical Research and Clinical Case Reports*, 2(4); DOI: <http://doi.org/12.2021/1.1045>.

Copyright: © 2021 Rajesh A Kantharia. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract:

Background and Objectives:

The evolution and progress of cancer research in India is noteworthy. This article is aimed to outline and analyse the disparity of cancer care, the current status of cancer research, urban and rural gap in clinical research in India. It also highlights the journey of a comprehensive cancer centre in rural India in pursuit of conducting clinical research.

Methods:

Literature reporting the cancer statistics and current status of cancer research in India were studied. The challenges faced by a comprehensive cancer centre in rural India in setting up a clinical research department and carrying out research studies were reported

Outcomes and Discussion:

The task of carrying out research activities in a rural setup can be challenging but certainly not insurmountable. A well planned and co-ordinated approach at the institution level with timely assistance from different research teams, pharmaceutical companies and funding sources are important aspects in establishing a Clinical Research Department.

Keywords: cancer research; rural cancer centre; research in india.

Introduction:

With the growing number of cancer cases in India, the number of tertiary cancer centres with dedicated Clinical Research Department, excellent infrastructure and trained oncologists is increasing in urban India [1]. However, the same is not true for rural India. This is reflected in the fact that, though 30% of cancer cases are treated in rural India the research activity from these centres is negligible. This paper discusses how cancer research can be effectively and economically conducted in rural India, referring to the experience the authors had while establishing a Clinical Research Department at a tertiary cancer centre.

Cancer Statistics in India:

In India, Cancer is emerging as a major cause of morbidity and is one of the leading causes of death making it one of the most dreaded ailments. According to the Globocan 2020 data [2], the number of new cancer cases registered in India were over 1.3 million while the number of deaths were over 8.5 lacs. Head and neck cancers constitute a significant part in the total number of cancer cases. Globocan data showed lip and oral cavity comprised 16.2% of all cancers in males and 10.3% of all cancers for both sexes combined. Lip and oral cavity cancer were the most common cancer in males and it was the first or second leading cause of death in seven Indian states in 2016 [3]. Some of the significant features of these cancers at presentation include young age, advanced disease, poor performance status and possibly more aggressive biology.

Disparity of Cancer Care in India:

Nearly 70% of Indian population lives in rural India and 95% of the cancer care facilities are in urban India. Rural areas lag far behind in terms of number of cancer centres and infrastructure. Patients from villages and tier three cities have to travel to Regional Cancer Centres (RCC) in major cities for cancer treatment. Also, the distribution of RCC'S is skewed and not proportionate throughout India. So, most of the RCC'S are overcrowded with lack of adequate manpower and infrastructure which



to further delay in treatment. Another key facet to consider in context to cancer care in India is the number of Oncologists. It is difficult to acquire the exact number of practicing oncologists in India. The number of oncologists in India can be expected to be 1500 to 2000, which suggests 1 oncologist per 700 to 800 cancer patients. This demonstrates the workload on oncologists. With the upsurge of cancer cases in India, a good number of Tertiary Cancer Centres with excellent infrastructure, trained oncologists have recently come up in urban India. However, the same is not true about rural India.

Clinical Research in India:

In the early 2000, India provided an increased access to almost all multinational companies to start large Clinical Trials here after implementation of the product patent. The sheer volume of patients in the Regional and Tertiary Cancer Centres across India provided most of these multinational pharmaceutical companies an increased access to treatment naïve cancer patients. The extensive network of RCC'S and cancer hospitals throughout India with well-developed Clinical Research Department helped the companies to complete the clinical trials within the given timeframe under tighter budget with enormous cost saving. Our well-defined National Cancer treatment guidelines, skilled Investigators, assisting manpower in trials and well defined Standard Operating Procedures to comply with good practices within the Clinical Research Department were several other positive factors.

Another important step forward towards cancer research was the funding of Investigator Initiated studies by the Indian Council of Medical Research (ICMR), the Department of Biotechnology and Department of Science & Technology. The National Cancer Grid (NCG) was formed August 2012 with the mandate of linking cancer centres across India [4, 5]. It brought together all the RCC'S and Cancer Institutes across India on a single platform with a focus to conduct large multicentre studies in basic, translational and clinical cancer research, with the emphasis on cancers common or unique in India.

India's contribution to the global cancer literature is gradually improving. Outputs of cancer research in Indian have increased from about 300 research publications per year in 1990 to almost 1500 publications in 2010 [6]. In 2018, Batcha elegantly reported the research contribution in Oral cavity cancer (one of the most common cancer in India) by Indian institutes and researchers. He mentioned that USA was the most productive country with 31.34% of global share of publications on oral cancer. India was ranked 4th globally in terms of total publications (2606 papers) which is 6.92% of global literature. In terms of global share of publications during 2010, it was 4.05% (147 articles of 37,680 globally) that increased further 9.25% (528 articles) of global output during 2016. India has been ranked at the top 5 place leaving other developed European countries behind. These numbers are encouraging considering few numbers of oncologists in context to the population.

Urban and Rural Gap in Clinical Research in India:

Indian contribution in cancer research is derived mainly from the work carried out at regional cancer centres, tertiary cancer care hospitals and educational institutes/universities. Most regional

cancer centres are functioning since more than 35 to 40 years. They have easy access to government funds, have dedicated research departments, infrastructure and manpower to carry out research. However almost 30 percent of the total cancer cases in India are treated by private practitioners in tier two and three cities in independent private hospitals or nursing homes which are not linked to National cancer grid and these numbers are not reflected in cancer registries as well. Contribution to Clinical Research from these centres is almost negligible due to limited resources and infrastructure, unavailability of dedicated research team and lack of aptitude.

Batcha reported the top 25 institutes in terms of oral cancer research in India. Around 72% of the total research in India was done by these. Most of them were Regional Cancer Centres (RCC) or educational institutes. Most of the regional cancer centres are functioning since over three to four decades and have an established clinical research department with various government and autonomous funding sources. The, research projects are part of the educational curriculum and thesis in these centres. Hence, these institutes have contributed to great extent in context to cancer related literature.

Research at Our Centre- A Rural Tertiary Cancer Centre:

Kailash Cancer Hospital and Research centre is a Rural Tertiary cancer centre in Western India serving patients from Gujarat and neighbouring states. The journey began in 2004 with two full time consultants joining and forming the Department of Head and Neck Surgical Oncology. With continuous efforts, the department and institute gradually developed commendable reputation which further consolidated with time. As a result, patient volume and clinical work also increased. As of now, the department of Head and Neck Surgery sees around 20,000 patients annually of which 5000 are new cases and around 800 major surgeries are carried out. Being a high-volume centre allows us to generate ample data that can facilitate research activities. The department still has only two full time consultants (one Head and Neck Surgical Oncologist and one Otorhinolaryngologist). Doctor to patient ratio highlights the workload on the consultants. Definite days cannot be dedicated for exclusive research-oriented work as the clinical work may suffer. Sparing time and energy for setting up a clinical research department with adequate support staff and an ethics committee and to carry out clinical research activities has been a herculean task. Hence, performing clinical research has been an arduous journey. Recently we started fellowship programmes to enable us in cultivating aptitude for research in young fellows and also initiate small scale academic research projects. Another major factor to be considered is the financial constraints. Our centre is a not for profit institute set up with an intent to provide comprehensive and quality treatment to rural patients belonging to lower socio-economic strata. Around 90 percent of total patients get treated under government schemes. Hence, majority of the budget is utilised for clinical work and treatment related items. Due to these constraints, funds are managed by collaboration with government and non-government sources including pharmaceutical companies, association with National Cancer Grid and through personal networking.

The pursuit for Research began in around 2010 when initial small-scale pharma sponsored research projects were initiated in medical oncology. A completely functional Clinical research



department was established in 2013 with formation of Institutional Ethics Committee. Our Clinical Research Department is DCGI and US-FDA approved site for carrying out Bioequivalence and Bioavailability (BE/BA) studies. Investigator initiated research projects were started in 2018 with beginning of Fellowship programme in Head and Neck Surgical Oncology. Our Institutional Ethics Committee received NABH accreditation in 2019 and further reinforced our reputation for carrying out Ethical Clinical trials.

Our centre has been part of one academic project and four sponsored Head and Neck clinical trials of which two are multicentric randomised clinical trials and two are phase II clinical studies.

- 1) A genomic study to decipher the association of various factors for resistance towards certain cytotoxic drugs for oral cavity cancers
Funding body – Gujarat State Biotechnology Mission (GSBTM)
In collaboration with Gujarat Biotechnology Research Centre (GBRC)
- 2) A phase II clinical study to evaluate the efficacy and safety of a definite drug in patients with recurrent Head & Neck Squamous cell carcinoma (NATCO trial)
A Pharma sponsored Multicentric trial
- 3) A multicentre prospective randomised controlled trial regarding the extent of neck dissection in patients with oral squamous cell carcinoma (SENPOS trial)
Funded By Foundation of Head and Neck Oncosurgery Group
- 4) A prospective randomised control trial on adjuvant treatment in early stage oral cancers (AREST trial)
Funded by National Cancer Grid (NCG)
- 5) Phase IIb/III to determine efficacy certain agents to reduce the incidence of second primary tumors of aero-digestive tract in patients with history of head and neck squamous cell carcinoma (Chemoprevention)
Funded by the National Cancer Grid (NCG)
The titles and summary of the completed and published/under review academic research are as follows
- 1) Impact of COVID-19 on cancer care in India: A cohort study (The Lancet, Oncology 2021)
Our Head and Neck Oncosurgeon was a co- author
It was a study to assess the impact of the COVID-19 pandemic on cancer care in India
- 2) Oral cancer surgery and COVID-19 pandemic: Our initial experience
It was aimed at sharing our experience and describing our protocols in operating oral cancer patients during nationwide lockdown in the first wave of COVID-19 pandemic.
- 3) COVID-19 pandemic and oncology clinical trials – Our experience
- 4) Comparative evaluation of angiogenesis in Metastatic and non-metastatic cases of oral squamous cell carcinoma: A morphometric analysis
The study aimed at evaluating whether angiogenesis plays a role in regional lymph node metastasis in oral squamous cell carcinoma
- 5) Evaluation of expression of Glut-1 in metastatic and non-metastatic squamous cell carcinoma
This study was performed to evaluate the relationship

- 6) Lymph node metastasis in cT1/T2 buccal mucosa squamous cell carcinoma: A subsite specific study
Objectives were to analyse the incidence of cervical lymph node metastasis in cT1/T2 buccal mucosa cancers, correlate it with the depth of invasion and study the percentage of occult metastasis.
- 7) Role of HRCT Thorax in pre-operative assessment of RT-PCR COVID-19 negative oral cancer patients
It is a retrospective analysis of 150 with oral cancer. Pre-operative HRCT Thorax was done for these patients and CORADS score was compared to the RT-PCR results. There was 100% positive correlation between RT-PCR and HRCT-Thorax. Our study supported the use of HRCT – Thorax as a diagnostic tool in pre-operative screening of oral cancer patients for COVID-19, particularly in RT-PCR negative cases.
- 8) Head and neck oncosurgery in the extreme elderly: Case reports
Two cases, a 95 year old patient with oral tongue squamous cell carcinoma and an 84 year old with adenocarcinoma of the parotid were reported. Both underwent surgical intervention. Emphasis was laid on the fact that surgery should be the mainstay in operable head and neck cancers even in the elderly patients and chance should be given for disease free survival and better quality of life, after weighing the risk/benefit ratio.
- 9) Image guided biopsy/ FNAC in head and neck cancers in Covid-19 pandemic: Our institutional experience.
Retrospective analysis of prospectively collected data of 35 patients was done from April to September 2020. Histopathological records along with patients' clinical records were reviewed. The main objective of our study is to know the role of Image Guided biopsy/FNAC to diagnose Head and Neck Cancers in selected patients in our institute during this pandemic.
- 10) Synovial sarcoma of buccal mucosa: A case report
We report a rare case of synovial sarcoma in oral cavity in a 23-year-old female. It was treated surgically with wide excision of the lesion, supraomohyoid neck dissection and Anterolateral thigh free flap followed by adjuvant radiotherapy
- 11) Oral cavity reconstruction with pedicled and free flaps: A critical review
It is a review of 540 patients treated at a single tertiary cancer centre who were reconstructed either with pedicled flap or free flap. The demographic details, tumor site and stage, defect type, type of flap and complication rates were analysed. Pedicled flaps were used in 421 patients and microvascular free flaps were used in 119 patients
- 12) Parathyroid Adenoma: A case report
A case of Parathyroid adenoma was reported in a 33 year old male patient. Serum Parathyroid hormone was greater than 900pg/ml. 99mTc - Sestamibi scan showed tracer activity suggesting parathyroid adenoma in the lower pole of the thyroid gland. Minimally invasive left parathyroidectomy was performed followed by frozen section analysis and intra-operative drop in parathyroid hormone confirmed the diagnosis of parathyroid adenoma
- 13) Isolated 6th cranial nerve palsy – A rare manifestation of tuberculosis



A case of tuberculosis manifesting with isolated abucens nerve palsy was reported in an 18 year old male patient. Non-contrast MRI scan of the brain showed focal poorly defined, abnormal signal intensity lesion in inferolateral part of the left cavernous sinus, left Meckel's cave causing their enlargement. CT guided tru cut biopsy from left mastoid antrum was performed which provided the diagnosis of tuberculosis. Patient was started on four drug anti-tubercular treatment and at the end of first month, diplopia was resolved. Patient continued the treatment for prescribed duration of 9 months.

Concluding Remarks:

While many tertiary cancer centres in smaller towns and rural India have state of the art diagnostic services and are following standard treatment protocols, the Clinical Research Department is either not present or is in a nascent stage. A well planned and co-ordinated approach at the institution level with timely assistance from different research teams, pharmaceutical companies and funding sources are important aspects in establishing a Clinical Research Department.

Acknowledgment: None

Conflicts of Interest: None declared

References:

1. Shripad D. Banavali: Delivery of cancer care in rural India: Experiences of establishing a rural comprehensive cancer care facility. *Indian J Med Paediatr Oncol.* 2015 Apr-Jun; 36(2): 128-131
2. Globocan 2020 (India): The Global Cancer Observatory, World Health Organization (WHO)
3. Preet K Dhillon, *Prashant Mathur, *A Nandakumar, Christina Fitzmaurice, G Anil Kumar, Ravi Mehrotra : The burden of cancers and their variations across the states of India: the Global Burden of Disease Study 1990–2016. *Lancet Oncol* 2018; 19: 1289–306
4. Bhaumik S. Network of high quality cancer hospitals is planned for India. *BMJ* 2013;346:f2858
5. Available from: <http://www.pib.nic.in/newsite/PrintRelease.aspx?relid=95184>
6. Lewison G, Roe P. The evaluation of Indian cancer research, 1990–2010. *Scientometrics* 2012; 93: 167–81
7. Sadik Batcha M: Research contributions on Oral Cancer in India: An analysis of citation count. *Journal of Scientometric Res.* 2018; 7(1): 29-37.