

## Regional Article

## Oncology in Nepal

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## Abstract

Nepal being a developing country is lagging behind in almost all its healthcare services and hence Oncology is also in its primitive stages. In this review, effort is being made to outline the historical perspectives regarding evolution of Oncology in Nepal, with a brief overview of cancer scenario in the country. This review also highlights the challenges, constraints and successes that are associated in initiation and nurturing of Oncology in developing countries. It also emphasizes the history, current status, challenges of academic training in oncology and also portrays the effort of various national and international organisations and government trying to achieve recent advancements and expensive modern technology.

**Key words:** Cancer, cancer treatment, developing country, oncology

## Background

Nepal is a small landlocked country, between the world's two largest growing economies, India and China. The recent republic nation of Nepal is renowned for the Himalayas and also has diversity in religion, culture, and ethnicity. Given its small size of 147,181 square kilometers, the country has a population of approximately 30 million and with the estimated cancer incidence of 50,000 - 70,000 per year.<sup>[1,2]</sup> Cancer is identified as one of the major non-communicable disease (NCD). NCD are responsible for 42% of total deaths, cerebrovascular accidents being the lead cause responsible for 21% of all NCD deaths, followed by cancer in 7% contributing to a major public health burden.<sup>[3]</sup>

According to National Cancer Registry of Nepal, which pooled data from 7 major hospitals where cancer is diagnosed and treated, the most common cancer in males is lung cancer, followed by oral cavity and stomach while the most common cancer in females are cancer of the cervix uteri, breasts, and lungs.<sup>[2,4]</sup> Comparative incidence

of cancer based on sites in 1990 and 2010 are presented in Table 1.<sup>[2,5]</sup>

Among the various risk factors for cancers, the most common identified in Nepal are smoking followed by illiteracy, lack of awareness, poor hygiene, and low economic status. Cancer burden has been increasing due to lack of awareness program, ignorance about the disease, consideration of disease as 'incurable' by the people, and mainly the high cost of cancer treatment when the country remains the poorest country in South Asia and the 20<sup>th</sup> poorest in the world with a GDP per capita of US\$ 600.<sup>[6]</sup>

20 years before, cancer was almost a non-existent disease, considered as incurable, not often diagnosed due to limited diagnostic facility and had very limited or no treatment options. But, now the scenario has changed with the development of various diagnostic modalities along with rapid progress in the field of cancer treatment. Currently, surgical skills focused towards organ and function preservation, highly precise radiation delivering equipment for conformal therapy, and chemotherapy with targeted molecules for cancer treatment has also become possible in the country.

## History of Oncology Services

Oncology in Nepal was heralded in 1991 when country's 1<sup>st</sup> radiation therapy center started with instillation of telecobalt at Bir Hospital, Kathmandu along with the 1<sup>st</sup> and single oncologist in the country, Prof. Tara Manandhar. At the time when Prof. Manandhar returned back to the country after completing her MD radiotherapy from Banaras Hindu University (BHU), Varanasi, India; not

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**Table 1: Comparative incidences of cancer (based on site) in Nepal in 1990 and 2010<sup>[2,4]</sup>**

Sites of cancer	1990		2010	
	Total no. of cases	Percentage (of total)	Total no. of cases	Percentage (of total)
Lungs	70	16.75	553	16.54
Cervix	70	16.75	505	15.11
Blood and Lymph nodes	67	16.03	282	8.43
Breast	50	11.96	333	9.96
Gastro-intestinal tract	49	11.72	377	11.28
Head and Neck	41	9.81	387	11.57
Genital-urinary system	21	5.02	134	4.00
Bones and Soft tissues	20	4.78	195	5.83
Ovary	11	2.63	204	6.10
Central nervous system	6	1.44	77	2.32
Miscellaneous	13	3.11	295	8.82
Total	418	100	3342	100

only there were no radiation equipments, the concepts of oncology was absent and she was made to work at a obstetrics and gynecology hospital.<sup>[4]</sup> Prof. Manandhar had to struggle for 12 years for the establishment of country's 1<sup>st</sup> oncology department at Bir Hospital. Later, in July of the same year (1991), 2<sup>nd</sup> oncologist of the country, Dr M. K Piya, returned back after completing his fellowship training in Medical Oncology from University of Colorado Health Sciences Center, Denver, Colorado, USA.<sup>[7]</sup> This initiated the multimodality cancer treatment in Nepal, which eventually progressed to the current status of cancer management in the country.

This was then followed by the establishment of Bhaktapur Cancer Care Center in 1992, which was later converted to Bhaktapur Cancer Hospital (BCH) by Nepal Cancer Relief Society (NCRS) with the support from Rotary Clubs, local people of Bhaktapur and the Government of Nepal, which added another milestone. NCRS is a non-profit making community-based nationwide social organization founded by Late Princess Jayanti Rajya Laxmi Devi Shah in 1982 (2039 B.S), with the aim of fighting against cancer and to promote prevention of cancer in Nepal. The organization has now established its branches in 43 districts of Nepal and has been mobilizing over 10,000 volunteers nationwide. NCRS is a pioneering organization for tobacco control in Nepal and also advises government regarding related matters. NCRS is being run with support from various national and international donors and partially by the government.<sup>[8]</sup> BCH, under the umbrella of NCRS, then started functioning as a comprehensive cancer center with various oncological sub-specialties like radiation oncology, medical, surgical, and palliative treatment for the cancer patients. BCH has also been sending physicians from Nepal for training in various subspecialties to India and abroad.<sup>[9]</sup>

Bir Hospital and BCH are serving cancer patients

relentlessly for several years from various corners of the country, but with the then-instilled telecobalt machines. Majority of patients during this period also used to visit India for treatment due to lack of adequate facilities within the country. Until then, disease burden was very low probably under-diagnosed, and also because of lack of awareness, illiteracy and other social and cultural barriers.

## Current Status

Oncology in Nepal is still at its infancy. Even though the developed world has sophisticated technology and an array of the targeted therapies and newer molecules for cancer treatment, Nepal has just initiated its struggle against cancer and is very far away from the recent achievements in the field.

Considering the diagnostic back-up, radio-diagnosis and histopathology and their sub-specialties has also improved over the last few years and has helped to pick up the disease in early stages. Needless to say that without these areas of diagnostic modality as an adjunct to cancer diagnosis and treatment, it's very difficult for oncology to progress and thus their development has also aided in oncology services. Before 20 years, there was hardly a CT scan facility in the country and very few onco-pathologists, but now CT scan services are available in every big cities and almost in all academic medical institutions. Increasing number of good and competent histo-pathologists are now involved in oncopathology and are prevalent around the country making the standardized diagnosis and staging more reliable. This is also preventing people from going abroad for diagnosis and hence for treatment. Provision of Magnetic Resonance Imaging (MRI) scans, bone scanning, various tumor markers and receptors studies has although made things easier, but oncologists still have to rely on India for all other diagnostic options like, PET scan, various immunohistochemistry studies, flowcytometry and

cytogenetics and eventually propelling a number of patient go to India and abroad increasing the expenses of cancer treatment.

Considering treatment of cancer in Nepal, at present, there are only 4 centers in the country treating cancer patients with the radiation therapy facilities, thus providing a huge load of radiation services every day. B. P. Koirala Memorial Cancer Hospital (BPKMCH), Bharatpur is a comprehensive cancer center, established with the help of government of Nepal and People's Republic of China and was started in 1999 with two Linear accelerators, one telecobalt, one high dose rate (HDR) Brachytherapy and was recently upgraded with IMRT. This center is the center of excellence in the country with state of the art facilities. BPKMCH has been sending physicians from Nepal for training in various subspecialties to India and abroad. Manipal Teaching Hospital, Pokhara started its service in 2000 with a linear accelerator and has been serving patients from the Western Development Region, but the number of patients receiving radiation treatment is less, around 200 patients per year because of its location within the country. Bir hospital, as mentioned before, has its then-instilled telecobalt and recently upgraded with a HDR brachytherapy unit. The recently-added 20 bed charitable Chameli Piya Oncology Ward at Bir Hospital Radiotherapy and Oncology Department with day care facilities has paved a way to treat lots of low income and underprivileged cancer patients. And, the then-established Bhaktapur Cancer Hospital (BCH) with a telecobalt has recently added a HDR brachytherapy unit. Few other institutions have been established recently from private sector, which provides various oncology services ranging from chemotherapy, onco-surgery, palliative treatment, etc. but at a higher cost affordable by a lesser number of patients. But, these centers have to refer patients to the above-mentioned 4 centers for radiation treatment. National Cancer Hospital, Jwalakhel is the only comprehensive cancer center in the country established from private sector, which was started from 1<sup>st</sup> January 2009.<sup>[10]</sup>

Considering cost of cancer treatment, as per capita income of an individual is only US\$ 600, majority of the population finds it difficult to bear expensive cancer treatments since people have to pay from their pocket due to lack of health insurance system. Therefore, people often resort to selling their properties and valuables for their treatment, and cancer being a chronic disease; people often land up losing both, their life and their property. Calculating the cost of cancer treatment based on price at Bir Hospital (which being a government institution is the cheapest facility), the cost of radiation treatment for curative intent is US\$ 68.22 (NRs 5500, 1 US \$ = NRs 80.61, as on 16<sup>th</sup> March 2012) and palliative intent is US\$ 49.62 (NRs 4000). These prices are much higher in other

centers and reaches around US\$ 200-250. The expense of chemotherapy is separate and has to be borne by the patient themselves and that obviously depends on the regimen and the molecule used. Also, the patient have to pay for all the diagnostic facilities including the expensive CT scan and MRI, which adds another 100 – 200 US\$ based on the type of cancer. This also does not include the expenses of surgical treatment if required by the patient, which is much more expensive than the radiation treatment. Recently, the Government of Nepal has taken a very encouraging step to help people suffering from cancer by providing a fund of US\$ 620.27 (NRs 50,000.00) to support each individual having cancer. This amount is not provided to the individual but is provided to the institution for covering the expenses of the radiation treatment, chemotherapy, and investigations.

Various non-government organizations have been established to improve cancer awareness and prevention in Nepal. Nepal Cancer Relief Society (NCRS, 1979), and Cancer Society Nepal (CSN, 2004) and Cancer Care Nepal (CCN, 2008) are the pioneer organizations working at different levels for the very purpose.<sup>[11,12]</sup>

There are numerous professional societies involving health care professionals as their members and have been working to improve the status of oncology in Nepal. Nepal Oncological Society (NEONS, 1999), SAARC federation of Oncologist Nepal (SFO – N, 2001) and the more recently formed National Society of Therapeutic Radiation Oncology (NESTRO, 2011) are the leading organizations conducting various CME programs and governing ethics in oncology practice among health care professionals.

## Challenges

The major challenge observed in oncology service in Nepal is the high cost of the treatment and because of the lack of insurance, and a proper health policy, people have to bear all burden by themselves.

Another major challenge is the lack of awareness about the prognosis of disease as most of the patients, their family, and even a lot of physicians and health care professionals consider cancer as an incurable in its any stage. This leads to delay in presentation of patients to hospital and thus increasing the number of advanced stages cancers and thus the morbidity and mortality.

Unavailability of the radiation delivering precision equipments is another challenge in the country, adding to that is high cost of such equipments, its instillation, and maintenance along with the ignorance shown by the stakeholders in the field of oncological development. When oncology and its subspecialties are developed so

much in the world, the lack of knowledge of health policy makers is clearly visible when department of radiotherapy and oncology is categorized under the department of radiodiagnosis and not under oncology by the health ministry, and this definitely needs to be revised.

And, also even the chemotherapeutic agents are available, the range is limited and newer molecules takes a long time to reach developing countries and even though they reach, it will be affordable to only a handful of patients.

Latest development of cellular and molecular diagnostic modalities is not available and will take years before they are available.

As oncology is a specialized field, lack of human resources is another problem in developing country as they are also scarce even in the developing world. Before 1990, there were only 2 oncologists in the country, but now there are more than 40 registered members in SFO-N. This looks very encouraging, and because of this, it has encouraged number of oncologists to work in Nepal and improve the scenario. And, because of the increase in manpower and oncology services in the country, the efflux of patients going abroad for treatment has also dropped tremendously than before.

Since oncology requires a wide variety of health care professionals including radiation oncologist, physician, physicist, therapy radiographer, oncology nurses, palliative care experts, counselors etc., it's very difficult to have all of them available in one center, which makes the work environment more challenging for all.

## Academic Trainings

National Academy of Medical Sciences, NAMS (Bir Hospital) is the only institute in Nepal to have 3 years post-graduate MD training program in MD Radiotherapy, which was started since 2003.<sup>[13]</sup> This program has academic collaboration with BPKMCH, Bharatpur where the residents are posted for 1 year during their 2<sup>nd</sup> year. This program has helped to improve oncology services in Nepal in many aspects and especially by producing specialist physicians in oncology. Even though the program was developed as MD radiotherapy, the curriculum was formulated with the aim of producing specialist clinical oncologist as there is no other program in oncology in the country. This MD program involves rotations in various oncology streams including radiation oncology, medical oncology, gynae-oncology, surgical oncology, head and neck cancer, palliative care. And thus, the produced manpower is competent to practise radiation therapy as well as chemotherapy for various solid tumors and

hematological malignancies. More recently, a few doctors with academic certifications in medical oncology from China are now available and are serving, but the demand clearly exceeds the handful of oncologists. But, even with these limitations, we can find few research and publications in literature in cancer patients from Nepal.<sup>[14-18]</sup>

To conclude, at this 21<sup>st</sup> century with remarkable advancement of oncology throughout the world, post-graduate academic training programs in various subspecialties of oncology is the present need for the improvement of oncology in Nepal.

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