

ORIGINAL RESEARCH

INCIDENCE OF CHILDHOOD CANCERS FROM 2015-2016

Elizabeth Caroline P¹, SirilP², Jayalatha N³, Krishna Chaitanya⁴, Vishal⁵

¹Final Year Medical Student, Bhaskar Medical College, Yenkapally, Hyderabad, Telangana, India.

²Professor &HOD, Department of Plastic Surgery, Kamineni Institute of Medical Sciences, Narketpally, Nalgonda, Telngana, India.

³Professor, Department of Radiology, Osmania Medical College, Hyderabad, Telangana, India.

⁴Associate Professor, Department of Medical Oncology, MNJ Cancer institute of Oncology & Regional Cancer Centre, Hyderabad, Telangana, India.

⁵Assistant Professor, Department of Medical Oncology, MNJ Cancer institute of Oncology & Regional Cancer Centre, Hyderabad, Telangana, India.

Corresponding Author:

Dr. Elizabeth Caroline P, Final Year Medical Student, Bhaskar Medical College, Yenkapally, Hyderabad, Telangana, India.

ABSTRACT

Background: Rates of cancer incidence in children are scarce in developing countries. The purpose of this study is to provide the cancer incidence rates among the children of Telangana during 2015-2016.

Materials and Methods: Data from the Telangana Population based cancer registry were utilized for this study. The analysis was limited to children <15 years of age. Cancer cases were restricted to those patients with a malignant neoplasm diagnosed between 1st January 2015 and 31st December 2016.

Results: The share of childhood cancer up to 14 years of age in Telangana was 4.8% of all cancers. The incidence of Leukemia was predominant among both males and females. In general rates were higher among male children compared to females. When standardized age adjusted incidence rates obtained from different national registries were compared, the age adjusted incidence rates in Telangana were higher in both male and female children.

Conclusion: The results of the present study reveals that the cancer incidence among male children is more in Telangana compared to their female counter parts.

INTRODUCTION

Thirteen percent of the annual deaths worldwide are cancer-related and 70% of these are in the low- and middle-income countries. In India, the leading causes of cancer-related death are carcinoma of the cervix in women and carcinoma of the lung and lower airways in men. The

focus of the National Cancer Control Program of India has been on primary prevention, by promoting tobacco control and genital hygiene; secondary prevention by screening for cervical cancer, breast cancer, and oropharyngeal cancer; and palliative care. Although child health continues to be the priority health issue, childhood cancer is not yet a major area of focus. Worldwide, the annual number of new cases of childhood cancer exceeds 200,000 and more than 80% of these are from the developing world. Seven out of 10 children with cancer in the resource-rich countries are cured, with a five-year survival for certain cancers, for example, Hodgkin's disease and retinoblastoma, now 95%. Recent studies have shown that this success in survival can be replicated in the developing world through twinning programs and shared expertise. As we make progress in reducing infection-related childhood deaths in India, it is no longer acceptable to ignore children with cancer, who have an increasing likelihood of cure with appropriate treatment.

Reliable data on incidence and mortality of childhood cancers are available from only a few areas in developing countries.^[1] The types of cancer occurring in childhood are very different from those in adults. Childhood cancers are rare as compared to adult cancers. The incidence is 2% in developed countries and about 3% in developing countries.^[2] There is also a significant geographic variation in its incidence in various parts of the world. An attempt has been made in this paper to study the nature and magnitude of the cancer problem among children whose families are residents of Telangana for a period of minimum one year.

MATERIALS & METHODS

The data collected at the Telanagana Population Based Cancer Registry for the one years period (2015- 2016) was used for this study. An extensive analysis was carried out in childhood cancers for incidence by age, sex, site, histology etc. The classification scheme used for primary site was

ICD-9 (1) and ICD-(1) for histology. Crude, age adjusted (world) and age-specific incidence rates were calculated. Telanagana is a densely populated,^[3] It comprises both rural and urban areas. The collection of data was done from the so-called "Telanagana Urban Agglomeration". The constituents of the Telanagana Urban Agglomeration are three statutory towns (Telanagana Municipal Corporation, Telanagana Municipal Committee). The population-based cancer registry of Telanagana. The Medical Social Workers personally visit the co-operating hospitals regularly, interview all the identified cancer patients and also those under investigation. They also examine the case records maintained by various departments of those hospitals namely pathology, hematology and radiology etc. All the information collected is cross checked for completeness of the data. Sometimes the same patient may be registered in more than one hospital for treatment. Care is taken to exclude these duplicates and ensure that each patient is included only once in the record. The Medical Social Workers also visit the office of the Telanagana Municipal Committee and Municipal Corporation of Telanagana and collect information about deaths where the death certificate states that the cause of death as cancer or tumour.^[4-6]

RESULTS

An estimate of the mean resident population as on 1st Jan 2015 below the age of 14 years in Telanagana by age and sex is presented in Table 1. It comprises 29% of total population in

Telangana. During the period 2015-2016, 59153 new cancer cases were registered for entire population. Among them 2689 were children accounting for 4.6% of the total cancer load. Of these, 1619 were boys and 1070 were girls.

Table 1: Estimated Resident Population of children by age and sex as on 1st Jan 2015, Telangana.

Age Group(Years)	Male	Female	Total
0-4	50109	40213	90322
5-9	41289	39106	80395
10-14	40281	32419	72700
0-14	131679	111738	243417

The number of new cases of the most common cancers in both sexes along with the Crude rate (CR) and Age adjusted (world population) rate (AAR). Leukemia was the most common cancer accounting for 29% in boys and 30% in girls. The other common cancers were brain tumour, lymphomas, bone and eye. The total crude incidence rates per 100,000 populations were 13.1 for males and 5.4 for females. Age adjusted incidence rate for world population and crude rate did not show any differences in either sex. In both sexes, Leukemia showed the highest incidence (4.1 per 100,000 persons for boys and 2.4 per 100,000 persons for girls) followed by brain tumours (1.4 per 100,000 persons for boys and 0.8 per 100,000 for girls). Male preponderance was observed for almost all sites. The age specific incidence rate are also more in male children compared to their female counterparts.

Table2: Number of New cases and percentage distribution of childhood cancers by age and sex, Telangana, 2015-2016.

Agegroup (Years)	Male	Female	Total
	NUMABER	NUMABER	NUMABER
0-4	61	29	90
5-9	56	38	94
10-14	43	39	82
0-14	160	106	266

Table 3: National comparison of world age-adjusted incidence rates for childhood cancers by sex, 2015-2016.

Place	Male	Female
Bangalore	5.9	4.3
Barshi	4.1	3.5
Bhopal	3.9	2.9
Chennai	3.3	3.1
Delhi	4.9	2.6
Mumbai	5.1	5.2
Telangana	4.4	4.1

The age adjusted incidence rates by sex for various national population are presented and For national comparison the incidence rates for the year 2015-2016 been compared. The table shows that cancer incidence is higher in boys than in girls in all registry areas. It could be as a result of our social factors wherein boys get more attention and are brought to hospital more often for management. The highest incidence rate in male was observed in Bangalore (5.9) and the lowest incidence was noted in Chennai (3.3). The highest and lowest incidence rate in female was observed in Mumbai (5.2) and Delhi (2.6) respectively.

Table 4: Number, percentage, crude (CR) and world age-adjusted (AAR) incidence rates per 100,000 population by sex and site for childhood cancers, Telangana, 2015-2016.

Site	Male				Female			
	0-4	5-9	10-14	0-14	0-4	5-9	10-14	0-14
Bone	3	2	3	8	1	1	2	4
Con. tissue	2	2	3	7	2	1	2	5
Kidney	3	3	3	9	3	3	1	7
Eye	2	2	2	6	2	2	2	6
Brain	3	3	1	7	3	2	1	6
Endo.Glands	4	4	2	10	3	2	3	8
Hodgkin'sdisease	3	2	3	8	3	1	3	7
Leukemia	4	4	1	9	3	2	3	8
NHL	2	2	3	7	4	1	4	9
Others	1	2	1	4	3	2	1	6

DISCUSSION

The cancer incidence rates calculated in this study are based on reliable sources of data. The population for the denominator was estimated from the actual population counts published by Census Bureau of India. In India, population census is undertaken every ten years. The Telangana Cancer Registry has been collecting data over the past 17 years and has standardized the method of data collection and reporting. In almost 80% of cases diagnosis was made on pathology. Thus, we believe our rates represent the most reliable estimates of actual cancer incidence in children <15 years of age. Parkins et al suggested that Leukemias are the most common cancers affecting the children accounting for 25 and 35 percents of total malignancies.⁴ In our study, leukemia accounts for approximately 31% of all childhood cancers in Telangana. The majority of leukemias (20%) are Acute Lymphoblastic Leukemia (ALL). The incidence of ALL was highest among children under five years of age. A study conducted by Greaves et al suggested that the ALL of the common B-cell type precursor type accounts for the peak in the incidence of childhood leukemias at the age of 2 to 5 years.⁵ In our study tumours of the central nervous system (CNS) are the second most frequent form of cancer in children and constituted about 12 percent of childhood cancers and the incidence is more in boys compared to girls. In most population, the CNS tumours comprise between 17 to 25 percent of all neoplasms and more boys are affected with CNS tumours than girls.⁷ In

some other studies also increasing CNS tumour incidence has been observed in adults as well as children.⁹⁻¹⁵ It has been postulated that these increases may be largely attributed to the diagnostic improvements in brain imaging. Hodgkin's and Non-Hodgkin's lymphoma together constituted about 15 percent of malignancies in children in Telangana. In boys the share of Hodgkin's and Non-Hodgkin's lymphomas together were 17 percent and it was 10 percent in females in their respective group's total childhood cancer load. Hodgkin's disease comprised 51% of cases of lymphomas. The incidence rates of Hodgkin's disease are higher in boys (1.1 per 100,000) than girls (0.4 per 100,000). The incidence is lower in the 1-4 age group. The highest incidence in the world for Hodgkin's disease in children was 12.0 per million population noted among Kuwaitis in Kuwait. The incidence rate of Non-Hodgkin's lymphoma for males was 1.1 and 0.4 for female giving a 2.8 fold difference. In a SEER program study¹⁶ a 2.6 fold difference between the incidence of NHL among boys and girls were observed. The highest incidence of NHL among the children in the world is observed in Alexandria, Egypt.^[7,8]

CONCLUSION

This study demonstrates higher incidence of childhood cancer among male children than female children in Telangana in almost in all sites during 2015-2016. When the sex ratio (male: female) in general population among the children were 1.12:1, the ratio of cancer incidence was 2.2:1 in Telangana which is noteworthy. Future analytic studies of genetic, environmental, prenatal and socio-economic factors are necessary to explore the possible reasons for these increased rates. This may lead to advances in our understanding of childhood cancer etiology.

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