

STUDY ON AVERAGE LENGTH OF STAY OF CHILDHOOD CANCER PATIENTS IN A TERTIARY HOSPITAL OF LUCKNOW, INDIA

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ABSTRACT

The present work to evaluate various paediatric cancers needing hospitalization and various factors affecting the average length of stay in hospital and also suggest the measures for reduction in length of hospital stay. It is a hospital based descriptive study, where data was collected from case records of the children admitted during year 2010 in Department of Paediatrics, C.S.M. Medical University UP, Lucknow and comprised of all registered patients with cancer aged 0-15 years and were under treatment. During one year 253 cases were registered with 36 deaths. Pretested Questionnaire was used to collect general and specific information about various factors influencing Length of hospital stay. About 71.1% and 28.9% patients were male and females, respectively. Mortality ratio was more in males (9.9%) than females (4.3%). Majority of patients admitted were Hindus 80.6% and only 19.0% were Muslims. Maximum Hospital stay (35%) patient were in the age group 1-4 years. Acute Lymphocytic Leukemia (ALL) 24.1% was the commonest among childhood cancer with 18.0% mortality rate with 31.2 days average length of stay in hospital.

KEYWORDS : Childhood cancer, religion, Hospital stay, acute lymphocytic leukemia

There is a shift in the disease pattern from communicable diseases to non-communicable diseases like cancer, diabetes and hypertension. This is mainly attributed to urbanization, industrialization, lifestyle changes and population growth. Cancer is a fatal condition, the dreaded enemy of humanity which attacks mankind irrespective of age, caste, colour, gender or any other boundaries. When a child has a fatal disease like cancer, the parent and immediate family face the loss of all their expectations for the child and an extended period of sadness. The strongest of all grief reactions occurs when parents have lost a child. Although child health continues to be the priority health issue in India, childhood cancer is not yet a major area of focus. Statistical brief data from the Healthcare Cost and Utilization Project (HCUP) on hospital stays for cancer care, in individuals under 18 years of age in 2005 shows trends in the number and cost of paediatric stays for cancer care from 2000 to 2005. The study shows that the two most common paediatric cancer conditions that require hospitalization are Leukemia and Brain tumour. Gurney and Bondy, (2005) observed that children and adolescents under 18 years of age accounted for 18.0 percent (7.0 million) of the 39.2 million total hospital stays in the U.S. Childhood cancers were principally responsible for 99,500 (or 3.5 percent) of paediatric hospital stays and just over 5 percent of all cancer hospital stays. The number of paediatric cancer

hospitalizations increased by over 80 percent (from 54,400 to 99,500 hospital stays) between 2000 and 2005, far outpacing the growth of all hospital stays for children and adolescents, which grew at about 25 percent. (Borker et al., 2006 and Merril et al., 2005).

Mark, (1983) reported that the average per day costs for paediatric cancer hospital stays also increased substantially from 2000 to 2005, by over 20 percent (from \$14,400 to \$17,500) with total aggregate cost more than doubling from \$785 million to \$1.7 billion. Paediatric hospital stays for cancer were more than twice as expensive (\$17,500 compared with \$8,500 general stay) and about two days longer than the typical hospital stay (6.4 versus 4.5 days). The high cost of cancer treatment was not solely due to longer hospital stays, but was also a result of more intensive treatment during each stay. The mean cost per day for paediatric cancer patients was nearly \$1,000 more than the average per day hospital costs among all children and adolescents (\$2,700 versus \$1,900 per day). Leukemia, by far, was the most expensive paediatric cancer to treat (mean cost of \$47,000 per stay) and had the longest average length of stay (16.1 days). The total aggregate cost of treatment of these two cancers was over \$653 million in 2005, accounting for 38.3 percent of the total cost for paediatric cancer care and 2.7 percent of the total cost for all hospital stays for children and adolescents.

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SCOPE OF THE STUDY

Research on factors related to Average length of stay of childhood cancer provides basis for developing preventive strategies to reduce hospital stay and cancer mortality. The purpose of this study is to focus on the factors responsible for hospital length of stay and producing burden on an apex hospital, block and exhaust the resources which otherwise could effectively be utilized for the treatment of new patients needed for hospitalization.

MATERIALS AND METHODS

The present study is a hospital based descriptive study, where data was collected from case records of the children admitted during year 2010 in Department of Paediatrics, (Haemato-Oncology unit) C.S.M. Medical University UP, Lucknow. The study population comprised of all patients with cancer aged 0-15 years admitted in the Paediatric department who were registered and were under treatment during the year 2010. The total duration of study is one year from January 2010 to December 2010. During the period, a total of 253 cases were registered with 36 deaths. The case records of the admitted patients were screened and relevant information were noted. The critical information about all patients were noted, regarding General information about paediatric patients admitted and specific information about various factors influencing length of hospital stay. (IAP,2009).

RESULTS

The total number of 253 new cases of Paediatric Cancer were admitted during the year 2010 (January 2010 to December 2010) and 36 deaths were noted.

Table I shows that overall about 71.1% patients were male and only 28.9% patients were female. Out of total patients, mortality ratio was more in males (9.9%) than females (4.3%). Majority of patients admitted were Hindus 80.6% and only 19.0% were Muslims. Out of total patients admitted, ratio of death was more in Hindus (14.7%) than Muslims 12 (12.5%).

Table II shows that overall a maximum admission and maximum hospital stay of 2315 days were in the age group 1-4 years. Among the age group 5-8 years hospital

stay was 1806 days and 1607 days hospital stay for the age group 9-12 years. The mean age of childhood cancer patients was about 6.2 years.

Table III shows that Acute Lymphocytic Leukemia 24.1% was the commonest among childhood cancers with 18.0% mortality rate, hospital stay was maximum in patients of ALL i.e. 1901 days (28.8%). The average length of stay is = total inpatient days/ total patients i.e. 26.1 days. Among the cancers, Leukemia having the maximum average length of stay while the CNS tumour (Ependymoma) having minimum average length of stay (Due to death).

DISCUSSION

Arora and Kanwar, (2009) reported that Childhood cancer contributes to less than 5% of the total cancer burden in India, with approximately 45,000 children diagnosed with cancer every year. In the developed countries 80% of the children with cancer are cured. Therefore, in India, the cure for children with cancer should be a priority. 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. Stiller, (2007) Cancer is generally regarded as a disease of adults. The patients admitted through O.P.D. and emergency in different units was transferred to oncology unit for further management. Prime Minister/Chief Minister Relief funds are granted for very poor patients. Eshwar Child Welfare Foundation and Cankids are two leading N.G.O.S, involved in providing care to poor patients. The present study shows male preponderance of cancer which consisted of 180 male (71.1%) and 73 (28.9%) female population. Some worker observed that overall cancer in childhood is more common among males than females and the male to female ratio in the most resource-rich countries is around 1.2:1. Study by Jorgen H.Olsen, the commonest childhood tumors were Leukemias, Tumors of the brain and spinal cord, Lymphomas, Neuroblastoma, Gonadal and Germ cell tumors, Kidney tumors, Soft tissue sarcomas and Retinoblastomas. Stiller et al., (2007) reported that Leukaemia is the most common childhood cancer in India with relative proportion varying between 25% and 40%.

60% to 80% of all leukaemia reported are Acute Lymphoblastic Leukaemia (ALL). Compared to the developed world, the biology of ALL appears different in India, with a higher proportion of T-Cell ALL (20%-50% as compared to 10-20% in the developed world), hypodiploidy and translocations t(1;19), t(9;22), and t(4;11), all of which contribute to a poorer prognosis of this leukaemia. It has been proposed that T-Cell ALL predominates in economically disadvantaged areas, but with urbanization, industrialization, and increasing affluence, common ALL, which peaks in incidence between the age of 2 and 5 years, increases.

Lin, (1999) observed that the crude incidence rate of pediatric malignancies in Malaysia was 77.4 per million children aged less than 15 years. In our study hospital stay for children suffering from cancer was most prevalent in 1-4 year age group representing 35.0% of stays followed by 27.4% in 5-8 years age of stay group. Similar findings were also formed Arora and Kanwar, (2009) that hospital stay for children suffering from cancer was most prevalent in the one to four years age group (representing 26.3 percent of stays) and the ten to fourteen years age group (representing 24.5 percent of stays). The youngest age group accounted for only 8.2 percent of cancer stays. Paediatric leukemia and brain tumor patients were, on an average, about 8 years of

Table I: Distribution of childhood cancer admissions and deaths according to gender and religion

GENDER	Admissions		Deaths	
	n	%	n	%
Male	180	71.1	25	9.9
Female	73	28.9	11	4.3
RELIGION				
Hindu	204	80.6	30	11.8
Muslim	48	19.0	6	2.4
Others	1	0.4	0	-
Total	253	100	36	14.2

Table II : Age wise hospital admissions, hospital stay and deaths in childhood cancer

Age group	Admissions	Deaths	Hospital stay (days)	
			n	%
<1 year	9	1	266	4.0
1-4 years	100	13	2315	35.0
5-8 years	68	11	1806	27.4
9-12 years	56	9	1607	24.4
>12 years	20	2	609	9.2
Total	253	36	6603	100

age, which was comparable with the mean age of all paediatric cancer patients and over a year older than the average paediatric patient (6.4 years). In our study, out of 82 cases of Leukemia, 61(74.3%) cases were of Acute Lymphocytic Leukemia (ALL) with 31.2 days average length of stay in hospital. Acute Lymphocytic Leukemia

(ALL) 24.1% was the commonest among childhood cancers with 18.0% mortality rate. Similar findings by Arora and Kanwar, (2009) reported that the Leukemia is the most common childhood cancer in India with relative proportion varying between 25% and 40%.

Table III : Distribution of hospital stay and death in different childhood cancers

Cancer type *	Admissions		Deaths	Hospital stay (days)		Average length of stay (days)
	n	%	n	n	%	
ALL	61	24.1	11	1901	28.8	31.2
AML	16	6.3	5	494	7.5	30.9
CML	5	2.0	1	175	2.6	35.0
HD	24	9.5	2	838	12.7	34.9
NHL	16	6.3	3	580	8.8	36.2
RB	39	15.4	3	496	7.5	12.7
WT	17	6.7	1	558	8.4	32.8
RMS	14	5.5	4	356	5.4	25.4
NB	12	4.7	1	347	5.2	28.9
GCT	12	4.7	0	156	2.4	13.0
ES	6	2.4	1	204	3.1	34.0
HB	5	2.0	2	144	2.2	28.8
CNS	1	0.4	1	9	0.2	9.0
Others	5	2.0	0	75	1.1	15.0
Undiagnosed	20	7.9	1	270	4.1	13.5
Total	253	100	36	6603	100	26.1

* ALL=Acute Lymphocytic Leukemia, AML=Acute Myeloid Leukemia, CML=Chronic Myeloid Leukemia, HD=Hodgkin,s Disease, NHL=Non Hodgkin,s Lymphoma, RB=Retinoblastoma, WT=Wilm,s Tumour, RMS=Rhabdomyosarcoma, NB=Neuroblastoma, GCT=Germ cell tumour, ES=Ewing,s sarcoma, HB= Hepatoblastoma, CNS=Ependymoma of Brain, Others=other malignant tumours.

CONCLUSIONS

The results of our study shows similarity from others which concluded that: Childhood cancer was more among Hindus than Muslims, Gender bias in seeking healthcare, including treatment of cancer, is one possible explanation. Hospital stay for children suffering from cancer was most prevalent in the one to four years age group. Acute Lymphocytic Leukemia (ALL) 24.1% was the commonest among childhood cancer with 18.0% mortality rate with 31.2 days average length of stay in hospital

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