

## Impact of Establishment of Dedicated Pediatric Cancer Ward and Care in Treatment Outcome and Abandonment of Treatment in Pediatrics Cancer Patients

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### Abstract:

**Background:** Cancer is the 9<sup>th</sup> common cause for the deaths in children of five to fourteen years age in India. A dedicated pediatric cancer ward was established in pediatrics department, GMC Jammu in October 2014 to provide free of cost treatment to children with cancer belonging to poor families. Aim of study was to assess impact of establishment of dedicated pediatric cancer ward on treatment outcome and abandonment of treatment.

**Methods:** Data of pediatric patients admitted with cancer was collected retrospectively from hospital records from January 2011 to December 2018. A comparative analysis was done to assess and compare treatment outcome before and after the establishment of dedicated cancer ward.

**Result:** A total of 172 children were included. 33 (19.18%) were in shared care, 47 (27.32%) opted higher center and 92 (53.48%) opted our center for entire treatment. A marked progressive improvement in successful treatment from 26.92% to 67.02% and decline in abandonment of treatment 37% to 5% was observed while there was no significant decline in mortality and treatment refusal.

**Conclusion:** Establishment of dedicated pediatric cancer ward helped in improving treatment outcomes in terms of successful treatment and treatment abandonment.

**Keywords:** Cancer, Children, Abandonment, Refusal, Outcomes and Treatment.

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### Introduction

Cancer is the 9<sup>th</sup> common cause for the deaths in children in 5 to 14 years of age group in India. [1] It was estimated that around 250000 new patients of cancer (<15 years) are diagnosed annually. In lower middle-class families, a gap between diagnosis and treatment is observed which also affects the survival rate of children. [2] Various studies reported that the most common challenges for effective cancer treatment are; lack of availability of diagnostic and therapeutic measures, increased cost of treatment, late manifestation of disease, limited radiotherapy and surgical resources. [3] A dedicated Pediatric cancer ward was established in Department of Pediatrics, Government Medical College, Jammu in October 2014 to provide better and free of cost treatment to children with cancer belonging to socio-economically poor families. The ward is manned by a consultant with a short-term training in pediatric cancer as consultant in-charge, nurses trained in administering chemotherapy and a counselor cum data operator. Accordingly, a comparative analysis was done to assess and compare the treatment outcome in terms of successful treatment, mortality,

abandonment and refusal of treatment before and after the establishment of dedicated cancer ward.

### Material and Methods

In this retrospective study, data of 172 pediatric cancer patients was collected from hospital records who were admitted in the Department of pediatrics, Government Medical college, Jammu with effect from 1<sup>st</sup> January 2011 to 31<sup>st</sup> December 2018. Study subjects were divided into two groups: group I included those admitted from 1<sup>st</sup> January 2011 to 31<sup>st</sup> December 2014 and group II included those admitted from 1<sup>st</sup> January 2015 to 31<sup>st</sup> December 2018 i.e, after the establishment of dedicated cancer ward. Data collected was demographic profile (age, gender, residence and socioeconomic status), type of malignancy for which patients got admitted, place of treatment chosen i.e, whether opted entire treatment from our center or opted treatment from other higher center or opted shared care for treatment, outcome of treatment and reason for abandonment. Socioeconomic status was measured as per modified Kuppuswamy scale. A comparative analysis was

done to assess and compare the treatment outcome in terms of successful treatment, mortality, abandonment and refusal of treatment in between the two groups.

**Statistical Analysis:** The presentation of the Categorical variables was done in the form of number and percentage (%). The association of the variables which were qualitative in nature were analysed using Chi-Square test. If any cell had an expected value of less than 5 then Fisher's exact test was used. The data entry was done in the Microsoft EXCEL spreadsheet and the final analysis was done with the use of Statistical Package for Social Sciences (SPSS) software, IBM manufacturer. Chicago, USA, ver 25.0. For statistical significance, p value of less than 0.05 was considered statistically significant.

## Results

Table 1 shows demographic profile of study subjects. Number of patients in group I was 78 and in group II was 94. There was significantly increase in number of admissions after the establishment of

dedicated cancer ward. Majority of the children were diagnosed with acute leukemia [126 (73.25%)] followed by Wilms tumor [18(10.46%)], Hodgkin's lymphoma [10(5.81%)], AML [8(4.65%)] and other tumors [10(5.81%)] as given in Table 2. Number of patients who opted whole treatment in our center was 66(70.21%) in group II which was significantly higher as compared to 26(33.33%) in group I as shown in Table 3. Outcome of treatment and reason for abandonment of treatment is shown in Table 4 and 5, respectively. Number of patients who were treated successfully in group II was 63(67.02%) which was significantly higher as compared to group I where only 21(26.92%) patients were treated successfully. Out of 78 patients in group I, 29(37.17%) abandoned treatment while in group II, only 5(5.31%) patients out of 94 abandoned treatment. There was statistically significant decline in abandonment of treatment in group II as compared to group I. Mortality was 32.05%(25/78) in group I as compared to 25.5%(24/94) in group II. But there was no statistically significant difference of mortality between two groups.

**Table 1: Demographic profile**

Variables	Group I n=78	Group II n=94	P value
<b>Gender</b>			
Male	40	51	0.697*
Female	38	43	
<b>Age in years</b>			
≤5	33	49	0.199*
>5	45	45	
<b>Residence</b>			
Rural	49	57	0.770*
Urban	29	37	
<b>Socioeconomic status</b>			
Upper class	2	5	0.211 <sup>†</sup>
Upper middle	10	17	
Lower middle	26	22	
Upper lower	19	34	
Lower	21	16	0.116*

**Table 2: Type of Malignancy**

Type of Malignancy	Group I n= 78	Group II n=94	P value
ALL	61	65	0.182*
AML	5	3	0.471 <sup>†</sup>
Wilms tumor	5	13	0.114*
Hodgkin's lymphoma	4	6	1 <sup>†</sup>
Others	3	7	0.351 <sup>†</sup>

\* Chi square test, <sup>†</sup> Fisher Exact test

**Table 3: Place of treatment chosen**

Place of treatment	Group I n=78	Group II n=94	P value
Shared care	24	9	0.0004*
Opted other centers	28	19	0.022*
Whole treatment in our center	26	66	<0.0001*

\* Chi square test, <sup>†</sup> Fisher Exact test

**Table 4: Outcome of the treatment**

Outcome	Group I n=78	Group II n=94	Odds ratio (95% CI)	P value
Treated successfully	21	63	0.181(0.09372 to 0.3507)	<0.0001*
Died	25	24	1.376(0.7081 to 2.6729)	0.346*
Abandonment of treatment	29	5	10.535(3.8327 to 28.9563)	<0.0001*
Refusal for treatment	3	2	1.84(0.2996 to 11.2998)	0.660†

\* Chi square test, † Fisher Exact test

**Table 5: Reason for abandonment**

Reasons	Abandonment In Group I n=29	Abandonment I Group II n=5	P value
Low socio-economic status	12	2	0.002†
Poor prognosis of disease	3	1	0.017†
Went to other centre	5	----	0.017†
Poor accessibility	2	1	0.591†
Adverse effects	6	----	0.008†
Unknown reason	1	1	1†

\* Chi square test, † Fisher Exact test

## Discussion

In our study majority of the patients were males with the male: female ratio 1.12:1. Majority (52.3%) of children were in >5 years age group. 62% of the patients were from rural area and 53% patients were from upper lower socioeconomic status. There was an increase in admissions of pediatric cancer patients from 2015 to 2018 after establishment of dedicated pediatric cancer ward in October, 2014, i.e. 45.34% to 54.66%. The findings of present study are consistent with the study conducted by Hazarika M *et al.*, (2019), which reported that the male: female ratio was 1.5:1 and the mean age of the study subjects was 7.4±4.8 years. The majority of the study subjects were from rural area (65%) and 78.9% were from upper lower and lower class. [4] Similarly, Kumar A *et al.*, (2013), observed that the most common abandoned patients were from rural area. [5,6] The most common diagnosis was acute lymphoblastic leukemia [126 (73.25%)] followed by Wilms tumor [18 (10.46%)], Hodgkin Lymphoma [10 (5.81%)], Acute Myeloid Leukemia [8] (4.6%) and other tumors [10 (5.81%)]. Out of 172 children, 33 (19.18%) were in shared care, 47 (27.32%) opted treatment from higher centers and 92 (53.48%) opted for treatment in our center. It was observed that there was statistically significant increase in successful treatment from 27% to 67%, ( $p < 0.0001$ ) and a statistically significant decrease in abandonment of treatment *i.e.* 37% to 5% ( $p < 0.0001$ ). The most common reason of abandonment was low socio-economic status (41.17%). Findings are consistent with the study conducted by Kumar A *et al.*, (2013), reported that the most common reasons of abandonment were rural background, financial issues and unwillingness to enucleate [6] Similarly, Aalam A *et al.*, (2018), stated that the treatment refusal or abandonment was observed among 40% patients and the most common reasons of abandonment were financial constraints and

prognosis issues. [7] In another study conducted by Mirutse M.K. *et al.*, (2022), found that the reasons of abandonment were according to type of cancer, phase of treatment, treatment outcome, feasibility and affordability. [8]

## Conclusion

The present study concluded that the establishment of dedicated ward for pediatric cancer patients helped in improving the treatment outcomes and reducing the treatment abandonment in resource constrained settings.

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